EXTENSION

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THE FARM AND FARM HOME MAGAZINE August, 1961

THE PICTURE ON THE COVER

When the cow gives you a high milk yield or when the bullock is a good work animal, you call the breed a good one. The Red Sindhi breed offers both. The cow yields 10 to 16 pounds of milk per day, and the bullock, though small, is good for draught. In addition, the breed adapts itself to different soil and climatic conditions. That is why the breed is preferred for up-grading local cattle.

EXTENSION

THE FARM AND FARM HOME MAGAZINE

Vol. 2 August, 1961 No. 2

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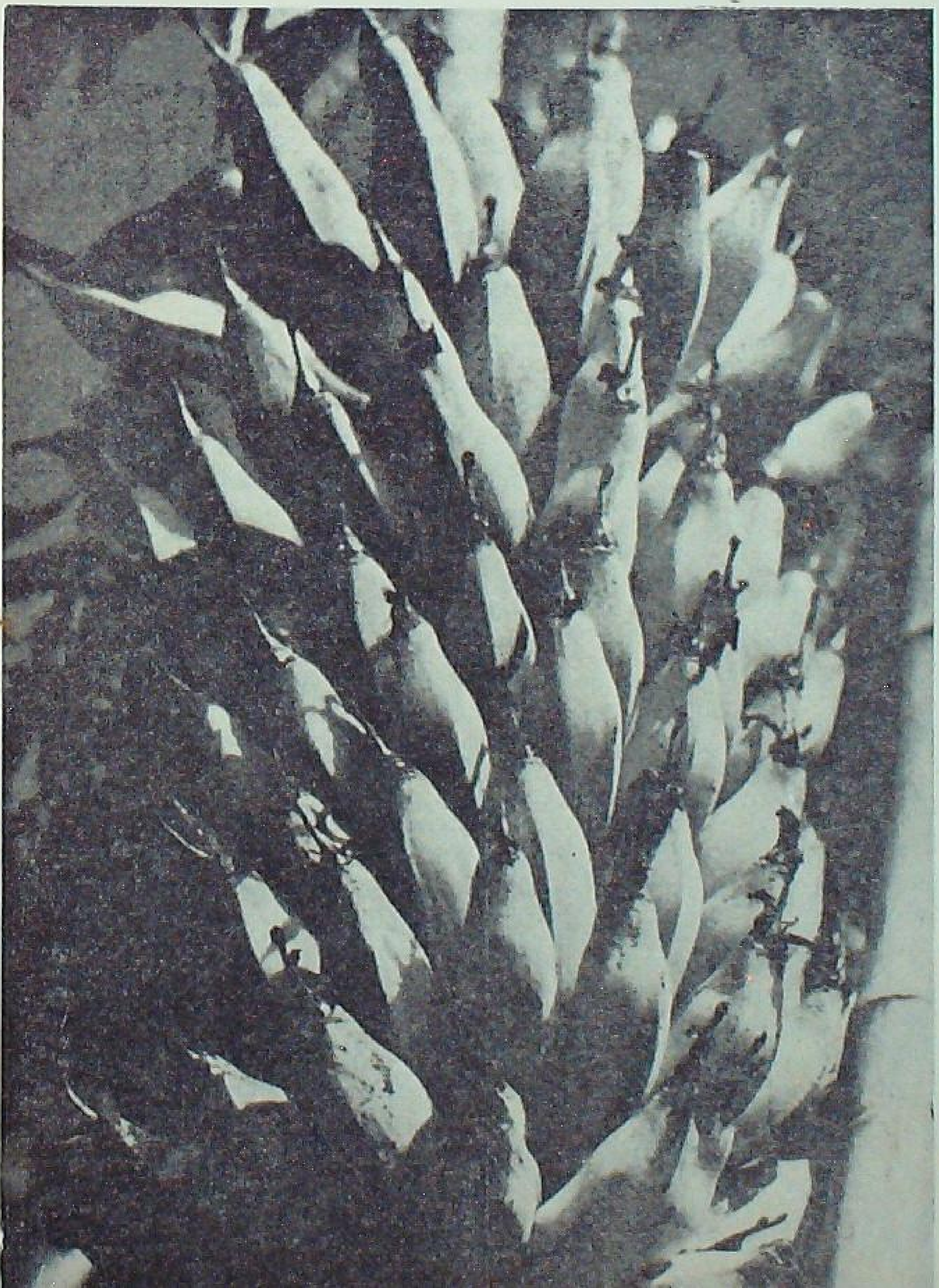
By L. VENKATARATNAM

how to grow

Bananas



BANANA is the fruit of the people. Farmers who grow it make very good profits.

The banana wants warm and humid conditions throughout the year to grow. You can grow this tasty and rich fruit in coastal areas, paddy-growing belts, and also in interior places if you have water enough to give it even during the summer.

The banana can neither withstand hot dry winds nor low temperatures. It will come up best in areas which do not get frost or suffer from extremes of temperatures.

West Bengal, Bombay, Bihar and Assam and the states in the South are best suited to banana-growing.

Select a rich and deep soil for banana. Plant two or three rows of *sewrii* (*Sesbania aculeata*) or *jantar* (*Sesbania grandiflora*) all round the field which you have selected. Sow the seeds of these in plough furrows close to the irrigation channels. Keep a foot space between two rows.

The *sewrii* or the other plants will help protect the banana from unkind winds.

SELECTING A VARIETY

Many varieties of banana are grown. The most popular ones are :

- *Poovan*—also known as *Lal Velchi* and *Karpura Chakra Keli.*
- *Basrai Dwarf,* also known as *Vamana Keli, Bombay Green* and *Harichal.*

• *Nendran* of Kerala and *Monthan*, which is a cooking variety, also called *Kakha kela*, *Bankel*, *Khasadia* and *Bhainsa*.

• *Lal Kela* or Red banana.

The variety you select for planting should have a good demand in your local market.

In many areas, bananas suffer from certain diseases. Hence, you must get disease-free suckers only from healthy plantations or from Government Farms.

PREPARING THE LAND

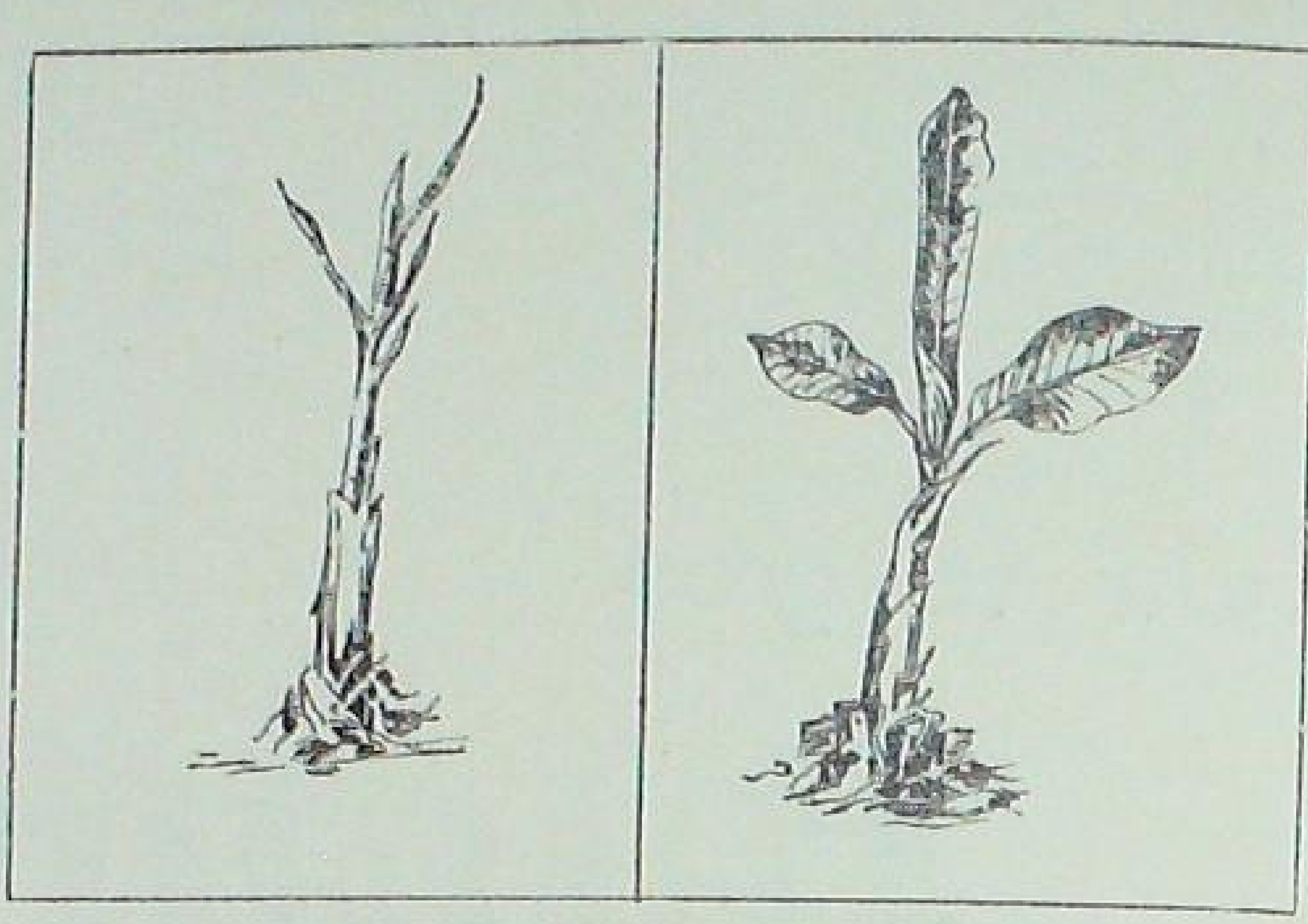
Divide the field into plots, so that you can plant the crop during different months or seasons. This will help you get a continuous supply of fruit for sale in the market.

In the plots, mark the places for planting with pegs. The distance to be given between two plants depends upon the variety, the soil and the period for which the crop is to remain in the field. Give a bigger spacing where the banana is to be in the field for two years or more. Normally, the spacing given varies from six to ten feet.

At the marked places, dig 1½ feet cube pits. Fill these pits with equal quantities of cattle manure and the dug-out soil.

SELECTING PLANTING MATERIALS

The banana plant produces daughter rhizomes or underground stems called 'suckers.' Some of these suckers have pointed, narrow and long sword-like leaves, and are hence called 'sword suckers.' Others have broad leaves, these are 'water suckers.'



A sword sucker *A water sucker*

For planting, use about two feet high sword suckers. Avoid too much grown-up suckers or very young ones.

Dip the suckers in 3:3:50 Bordeaux mixture and then in cowdung water. Dust some wood ash on the suckers and keep them in shade to dry. Suckers thus treated will remain good for a fortnight.

The best time for planting banana is June-July or December-January. In the Deccan area, the March planting gives better results than the June planting.

IRRIGATING THE CROP

In light sandy soils, red soils or laterite soils, give plenty of water to the banana. In medium clay loams, alluvial soils and river basins, irrigate once in five to ten days, except during the summer when you can reduce the intervals. The banana needs to have the soil always moist. Hence, scratch the soil an inch deep every now and then and see if it lacks moisture. This will be a good guide for irrigating the crop.

MANURING THE CROP

The banana is a good feeder. To produce large bunches, it needs manures to be given within the first six months of planting. Supply eight ounces of castor cake or groundnut cake and four ounces of ammonium sulphate or two ounces of urea per plant in the second month of planting. Give a second similar dose in the fourth and again in the sixth month.

In case you want to take a second or third crop from the same land, add four ounces of both superphosphate and potassium sulphate per plant in addition to the oilcake and ammonium sulphate.

Apply fertilizers in three to four inches deep pits on one side of each plant, and cover.

INTERCULTIVATION

Bananas grow quickly and in six months' time completely cover the ground. During this period, weeds have to be removed and the land given diggings and ploughings. If you sow sunnhemp and *dhaincha* around the banana, they will not only prevent weeds from coming up, but also will supply the green manure which you can plough in after eight weeks. Whenever you give a digging or ploughing to the soil, some of the soil can be heaped around the banana plants to give them support. In case the variety you are growing is a tall one, then provide support with bamboo poles. This will keep plants safe from wind damage.

From the third month onwards, you will find the plants giving out suckers. Cut them out from time to time. When the plants come to flowering, you can allow only one sucker to come up. This will be the sucker for use in further planting.

When the bunch develops fruits of the size of a finger, or a month after flowering, spray the crop with 3: 3: 50 Bordeaux mixture. Cover the bunch with the nearest leaf of the plant. This will prevent sunburn and uneven ripening of fruits. To test whether the bunch or hand is ripe, tap on it with the finger and you will hear a metallic sound. Harvest the bunches carefully.

BANANA DISEASES

Sometimes, the plants produce smoke-coloured bunches. This is due to a disease. If the disease is severe, plants stop growing. Dwarf stem varieties produce very small leaves. When you see such signs of disease, cut the plants and destroy them. Do not grow bananas in the field which gets such a disease. Dipping of suckers before planting in Bordeaux mixture helps prevent the spread of the disease.

In some areas, banana plants show pale yellow bands on the leaves. Such plants get stunted and the leaves curl up. Bunches are either not formed or get dwarfed. This is the 'bunchy top' disease of banana. Cut and destroy such plants. The pits from which the plants are removed should also be burnt with straw and dry leaves. Be careful and avoid such areas where the disease has broken out for selecting the suckers for planting.

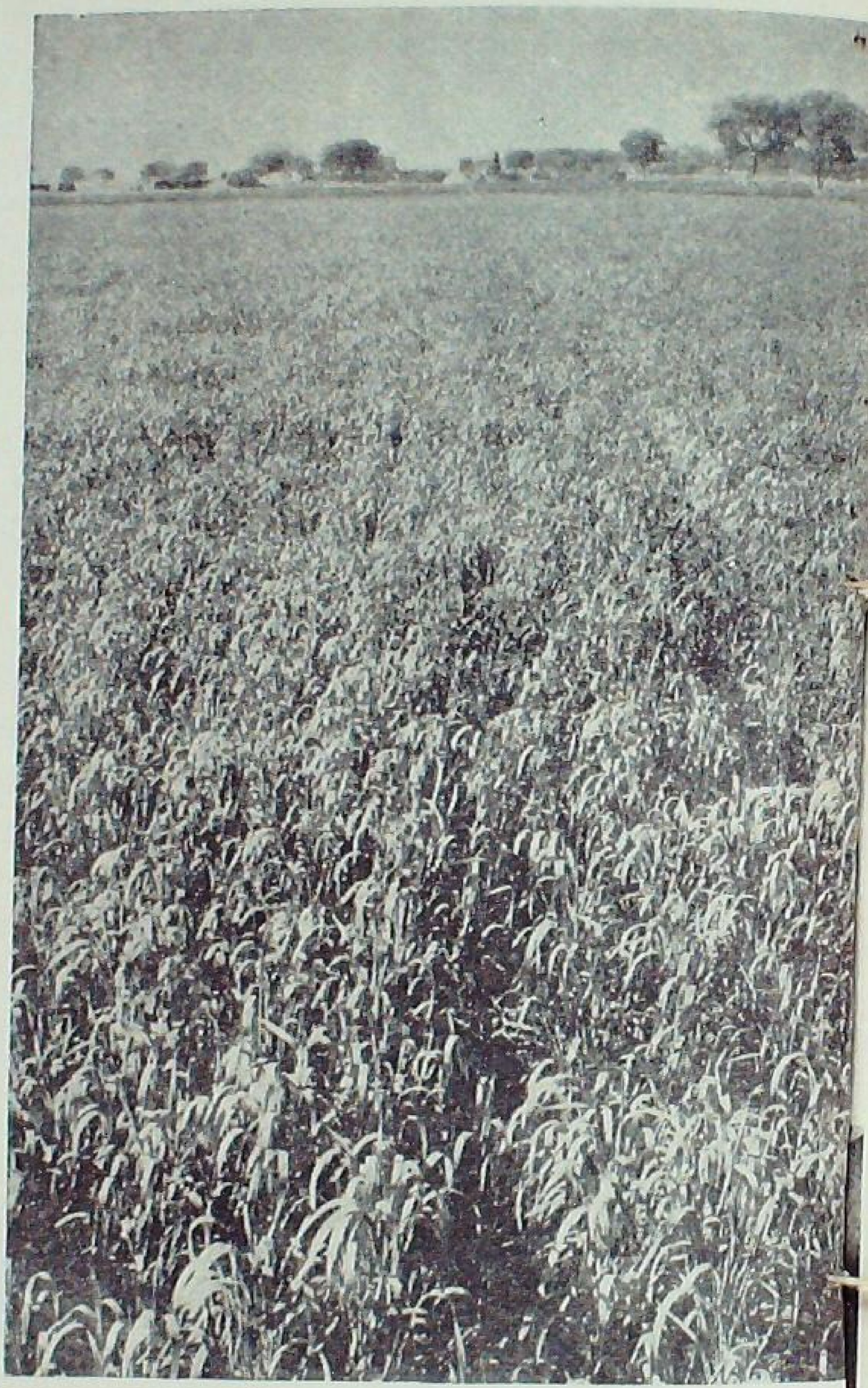
Sometimes, bunches may show black spots and start rotting from the tip. This is due to the disease 'anthracnose.' Spray 3 : 3 : 50 Bordeaux mixture on such plants and flowers.

Stems and bunches of banana plants on the western side are too much exposed to the sun and turn yellow and also show water-soaked spots. In such cases, the bunches and the stems should be shaded with leaves. The leaves drying on the banana plant should not be removed.

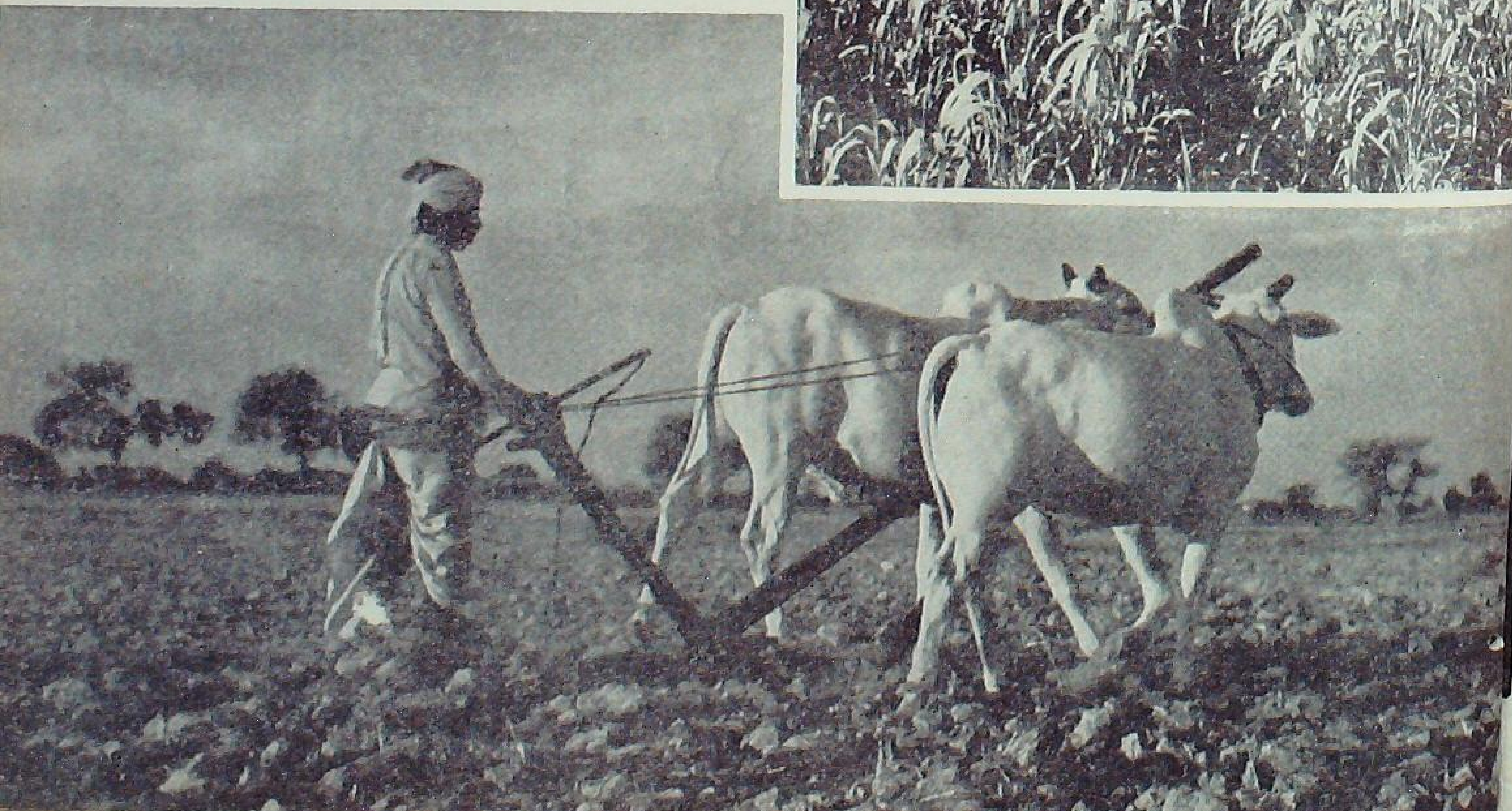
For any information or help you need in taking up banana cultivation, contact the Horticulturist of your State or your Gram Sevak.

Follow paddy with wheat

MAKE YOUR PADDY FIELD,
A PADDY-WHEAT FIELD



If you are to succeed in 'paddy-wheat programme', pay proper attention to the land preparation



In many of our rice-wheat areas, it is possible to grow a crop of wheat after paddy with profit. These areas are in Uttar Pradesh, Madhya Pradesh, Punjab, the Rajasthan, Bihar, Maharashtra and Gujarat.

Since the last three years, farmers in Himachal Pradesh are following this paddy-wheat programme on a large scale with success. This followed earlier experiments conducted at the Research Station at Dhaula Kuan and the Seed Multiplication Farms at Bhangrotu and Joginder Nagar in Mandi District.

To enable farmers raise good crops of both rice and wheat in the paddy lands, they are advised to :

grow early-maturing varieties of rice and wheat,

apply fertilizers (and drill the fertilizers for wheat),

grow a quick-growing green manure crop before transplanting paddy under irrigation, and

prepare the land well.

In Himachal Pradesh, the important rice varieties recommended are *Type 21*, *China 972* and *China 988*. These are high-yielders also.

Rice is normally transplanted in early July and harvested in mid-November. The two Chinese varieties mature two weeks earlier and are harvested by the end of October, which makes the growing of the wheat crop next easier.

The improved wheat varieties *Ridley*, *N.P. 792*, *N.P. 829* and *N.P. 809*—recommended in the State—are also high-yielders and *N.P. 792* and *N.P. 829* are early-maturers, good for the 'paddy-wheat' rotation. These can be sown as late as the beginning of December and still mature with other varieties sown at the normal time.

In the State, farmers are advised to apply cattle manure at 100 maunds per acre while preparing the land for rice and a fertilizer mixture consisting of two maunds of superphosphate and one and a half maunds of ammonium sulphate.

The fertilizer dose for wheat is one maund each of superphosphate and ammonium sulphate. All the superphosphate and half of ammonium sulphate are drilled with a *pora* while sowing wheat. The remaining half of ammonium sulphate is top-dressed towards the end of January or early February.

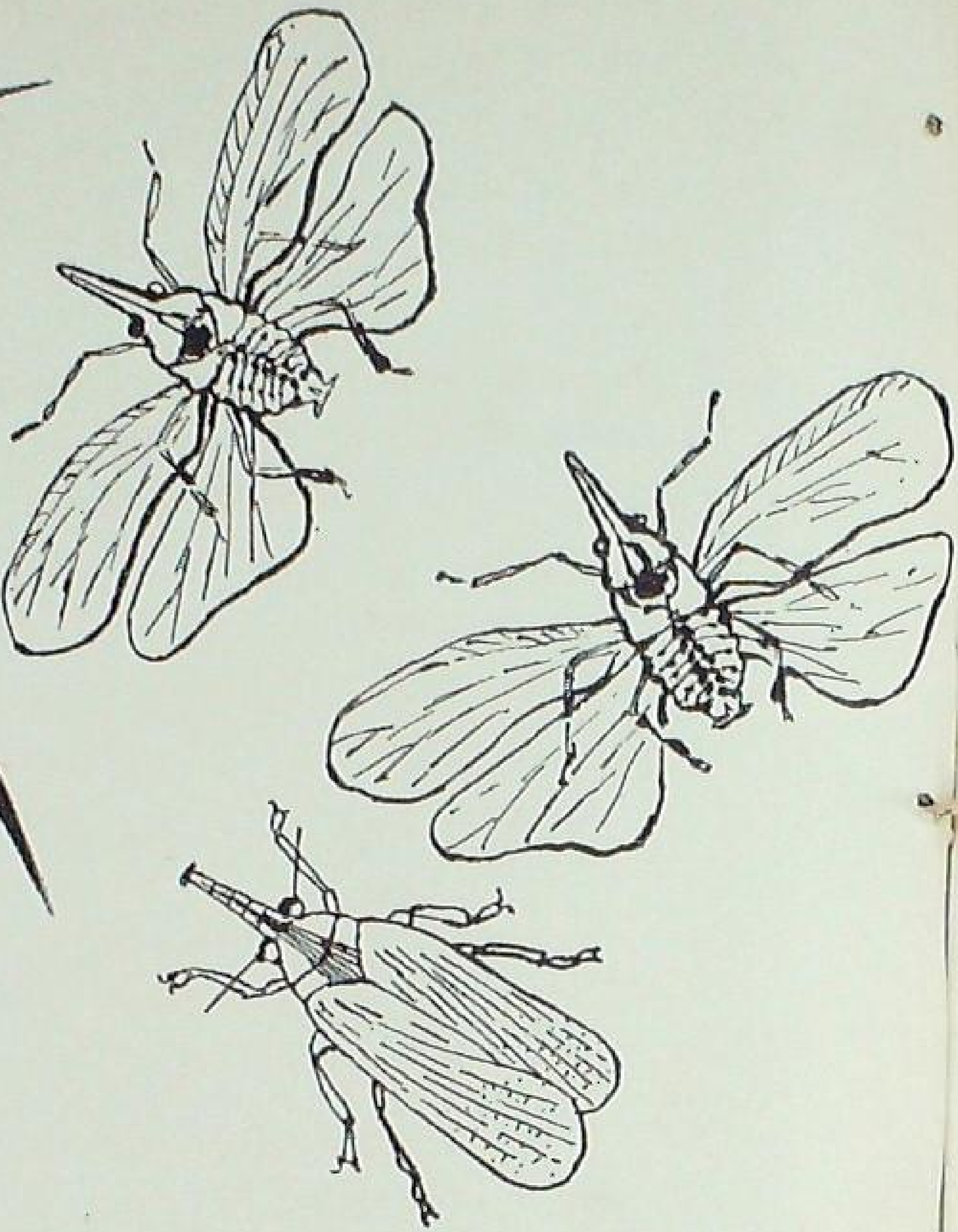
Farmers are also asked to grow a green manure crop like *dhaincha* or *bhurt* after wheat is harvested and bury the crop while puddling the land for paddy.

For growing paddy and wheat with success, the land has to be prepared well. Clods are a problem, especially after paddy harvest, and very often delay the sowing of the next crop. Using a simple clod-breaker is recommended in such cases.

To maintain the soil fertility, a leguminous crop like *berseem*, *guara*, *dhaincha* or sunnhemp can be raised in rotation once every second or third year.

The 'paddy-wheat' rotation is more suited to well-drained single crop rice fields than to wheat fields, because rice requires plenty of irrigation water or a good rainfall. In the last three years, the paddy-wheat rotation has spreading fast in the valley areas of Himachal Pradesh. The research farms in the State are showing farmers how by following the better practices they can take the rice and wheat yields to higher levels. At the Bangrotu Farm, in four years the paddy yield has been raised from 20 maunds to 28 maunds per acre and wheat from 16 maunds to 28 maunds. Similarly at the Joginder Nagar Farm, paddy yields have been increased from 10 maunds to 41 maunds and wheat from 5 maunds to 10 maunds per acre.

Farmers in the paddy-wheat areas in the other states should also be able to try out this practice and get better returns from their farms.



September-November Is Pyrilla Time

SEPTEMBER to November is the period for fighting pyrilla, the sugarcane leaf-hopper. It is at this time that it does its worst damage to your sugarcane crop. You will find that the attack is greater in heavily manured and water-logged fields.

Pyrilla sucks the plant sap from the underside of the sugarcane leaf. Such leaves become pale and appear sickly. You will find the affected canes useless, as you will get very little *gur* or sugar from them.

The only way to get rid of the pest now is to start spraying the crop attacked by pyrilla. Use any one of these spray materials for the purpose.

(1) DDT—0.25 per cent suspension

(2) BHC—0.25 per cent suspension

(3) Toxaphene—0.25 per cent emulsion

(4) Endrin—0.1 pound of actual emulsion per acre

(5) Malathion—0.1 per cent emulsion

Fifty gallons of DDT spray will cost Rs. 7. Similar quantity of the other spray materials will cost Rs. 3, Rs. 7, Rs. 3.25 and Rs. 7, respectively.

You will need 25 to 50 gallons of the chemical for spraying an acre of the young crop and 100 to 150 gallons for an acre of a full-grown crop.

Pyrilla control should start quite early. In fact, you have to take measures right from the time it starts appearing in mid-March (when it lays its first batch of eggs). At this stage, you can :

- Bag the adults and nymphs and kill them in water in which you put a little of kerosene oil.

Chemical dusts offer a good way of controlling pyrilla

- Destroy the egg-masses or even the lowermost leaves bearing the eggs (during April and May in the North).

- Remove the sprouts from the stubble (at least once by the end of April) if a ratoon has to be raised, and also if you can irrigate the field.

Apart from these, you will find in chemical dusts a good way of controlling the pest, especially during the pre-monsoon period.

Dust your crop with five per cent BHC at the rate of 20 to 30 pounds if the crop is young, 30 to 50 pounds where it has set in the internodes and 50 to 80 pounds in a full-grown crop. Also, dust in the mornings when there is no wind and the leaves are still wet with dew.

FOWL PARALYSIS IS A COSTLY DISEASE

By S.G. IYER

A LARGE number of poultry birds are dying every year on our poultry farms due to a disease called fowl paralysis. The disease, which is also called range paralysis or pullet paralysis, is caused by a virus.

The name, fowl paralysis, however, is misleading. A paralysed fowl need not necessarily be suffering from fowl paralysis. This symptom may also be due to such reasons as presence of worms, ticks, coccidiosis, Ranikhet or even defective feeding.

In fowl paralysis, paralysis is seen only when the bird's nerves are affected. To be sure that it is fowl paralysis, you have to send the affected bird or its tissues to a veterinary laboratory for examination and report.

Fowl paralysis attacks younger birds more easily than older birds. In pullets, the disease attacks just about the time they start laying. Though you will find cases when birds are two months old, the heaviest losses occur when it attacks four to ten-month old birds.

SYMPTOMS

The symptoms depend upon the tissues affected. Often, the first things you see are the lameness in one or both the legs or the drooping of one or both the wings. As the disease advances, the lameness increases till the bird lies helpless on the ground. The legs may be found to be held stretched forward or backward or held out and away from the body.

In early cases, birds show a jerky or stilted walk. On being suddenly frightened, they show loss of muscular control.

In advanced cases, birds are unable to go for food or water, and though at first they look quite bright about the head, they lose their body condition quickly and die within a few days.

Blindness in one or both the eyes is also a common symptom. The reddish yellow iris becomes greyish (pearl eye) and loses its power of expansion and contraction. The pupil of the eye becomes irregular in shape and does not respond to light.

In some cases, fowls show digestive troubles. There is impaction of the intestines. Due to diarrhoea, the birds lose condition.

Where lungs get affected by tumours, birds start gasping for breath.

In other cases, combs and wattles turn pale, and the birds lose in condition. Such birds may die in a few days when the disease is rapid; otherwise may linger on for a long period.

An affected or a dead bird on being cut open shows enlarged nerves (controlling the wings and legs) in cases where paralysis is noticed. The colour of such nerves is also found to be greyish instead of white. Tumour-like masses may be found in the liver, spleen, kidneys, ovary and intestines. These tumours, greyish-pink or yellowish in colour, vary very much in size. In some cases, the liver and spleen may be found enlarged. Frequently, the liver is found ruptured and there is internal bleeding.

LOSSES

Unlike other infectious diseases which last for a short time, fowl paralysis lingers in the flock for a number of years. Though in a single year the loss due to the disease may not be much, but over a number of years, this will total up to something high. Also, there is loss in egg production, as affected birds stop laying early, and take a long time to come back to laying.

PREVENTION

Medicines and vaccines are of no avail in fowl paralysis.

You can, however, cut down losses by culling away birds which show even the least sign of going off in condition. Early culled birds can safely be used for the table.

On infected farms, breed only from second-year or older birds. Since some strains are more resistant to the disease than others, 'progeny testing' helps. Breed from birds which show very little infection and cull out those which are easily hit by the disease.

In case you are not breeding birds on the farm, and if the farm is infected, replace all six-month and older stocks.

Better purchase hatching eggs for replacement rather than stock-birds of which you know little about.

BIRDS NEED MINERALS

NEARLY four per cent of the body of chickens is made up of mineral matter ; the egg (including the shell) the birds lay contains about ten per cent minerals. Minerals, therefore, in proper quantities are essential in their daily ration. An easy, cheap and effective mineral mixture consists of 40 per cent bone-meal, 40 per cent oyster shell or limestone and 20 per cent common salt. You can have a still better mineral mixture by adding 27.97 per cent bone-meal, 50 per cent oyster shell or limestone grit, 20 per cent salt, 2 per cent ferrous sulphate, 0.02 per cent potassium iodide and 0.01 per cent copper salt.

JUST RELEASED

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Cloth bound, 454 pages

The Business Manager
Directorate of Extension
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A buck scraper can do it

By D.N. KHERDEKAR

IF YOU ARE UP AGAINST THE PROBLEM OF LEVELLING YOUR LAND, THE BUCK SCRAPER WILL SOLVE IT FOR YOU

IF you want to level your land for conserving soil or for irrigation or for putting up bunds, all you need is a pair of bullocks and a buck scraper.

Buck scraper, also known as the 'soil scoop' or the *petari*, is a simple implement and is easy for an average pair of bullocks to draw it. It is available in two cubic feet or three cubic feet capacity. It weighs about a hundred pounds.

Buck scraper is made of 3/16 inch steel sheet reinforced at the corners. The scraper pan is fitted with two iron plates parallel to each other and at right angles to the scraping edge, so that the wear and tear is reduced and the draught decreased. The cutting edge may be plain or toothed. This edge, made of high carbon steel, is welded or riveted to the pan. The handles are of wood so that they will not be hot to hold during the summer.

In some models, two sharp steel points are fixed at the corners. When the pan is filled with the soil and turned upside-down for emptying, the steel points absorb the shock.

Working a buck scraper is easy. As it is pulled along, it collects the soil from the higher levels. This is emptied at the lower level by tilting it a little.

If you have a large area to level, you can work a gang of scrapers. One man can load all of them and another dump them.

A buck scraper costs Rs. 60 to 80, depending upon the size. You can buy one through the Agricultural Engineer of your State.

Sow the seed on raised beds and get healthier and better seedlings

Raise better **onion seedlings**

SHORTLY, farmers will, as usual, be raising onion nurseries for planting this *rabi* season.

Most of them will work the soil to a good tilth, put up a foot high bunds at intervals to make 100 square feet beds, apply two to three baskets of well-rotted cattle manure to each bed and mix it with the soil, and then will sprinkle onion seed over the beds. They will use four to five seers of seed to raise sufficient seedlings to plant an acre. They will cover the seed with a plank, and then irrigate the beds every ten days.

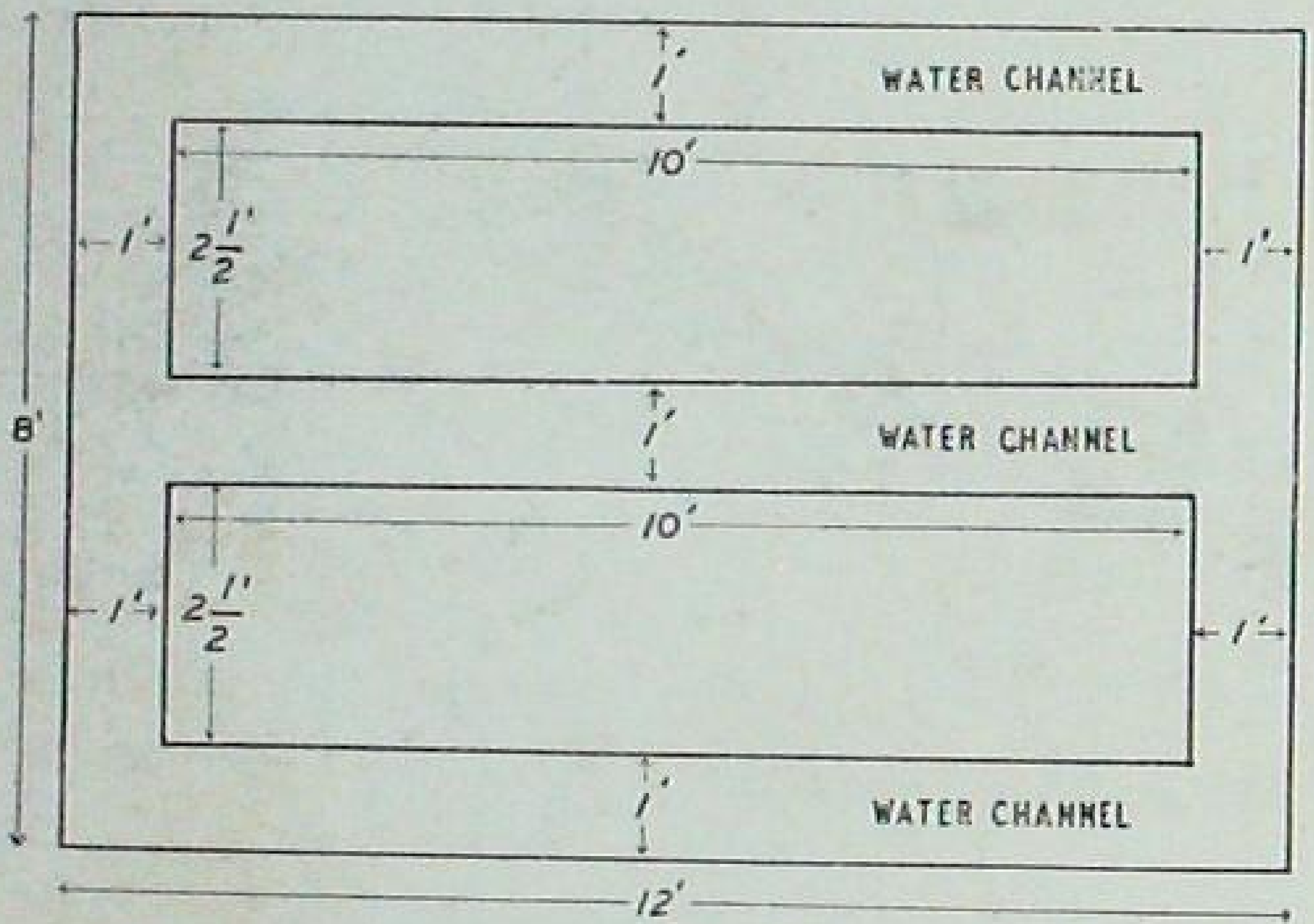
In eight weeks, seedlings will be six inches high, when farmers will lift and plant them in the field.

Thus, they will be following the traditional system of raising onion seedlings.

This system has defects. The seed-rate used is too high. As a result, seedlings grow thin and lanky. Water given is too much. So, seedlings get 'damping off' disease, as a result of which a good many die off.

They can get over these defects by changing the system a little.

While they prepare the beds in the normal manner, they should open out a foot-wide and nine-inch deep irrigation channel all round the beds. The soil removed can go to strengthen the bunds between the plots.



They need to make only two raised beds of 10 feet by 2½ feet (instead of the ten flat ones they normally make). On these they have to sow the onion seed in lines three inches apart. Before sowing, they should mix the seed with 'Agrosan GN' at one part to 400 parts of seed. They will need only a seer of the seed to get enough seedlings to plant an acre.

They should apply the water through the irrigation channel, thus avoiding flooding.

The seedlings will be stronger and healthier this way, and will be ready for pulling out earlier, that is in five week's time.

Thus, they will need a smaller area for the nursery, a smaller quantity of seed and irrigation water, and will get healthier, stronger seedlings for planting.

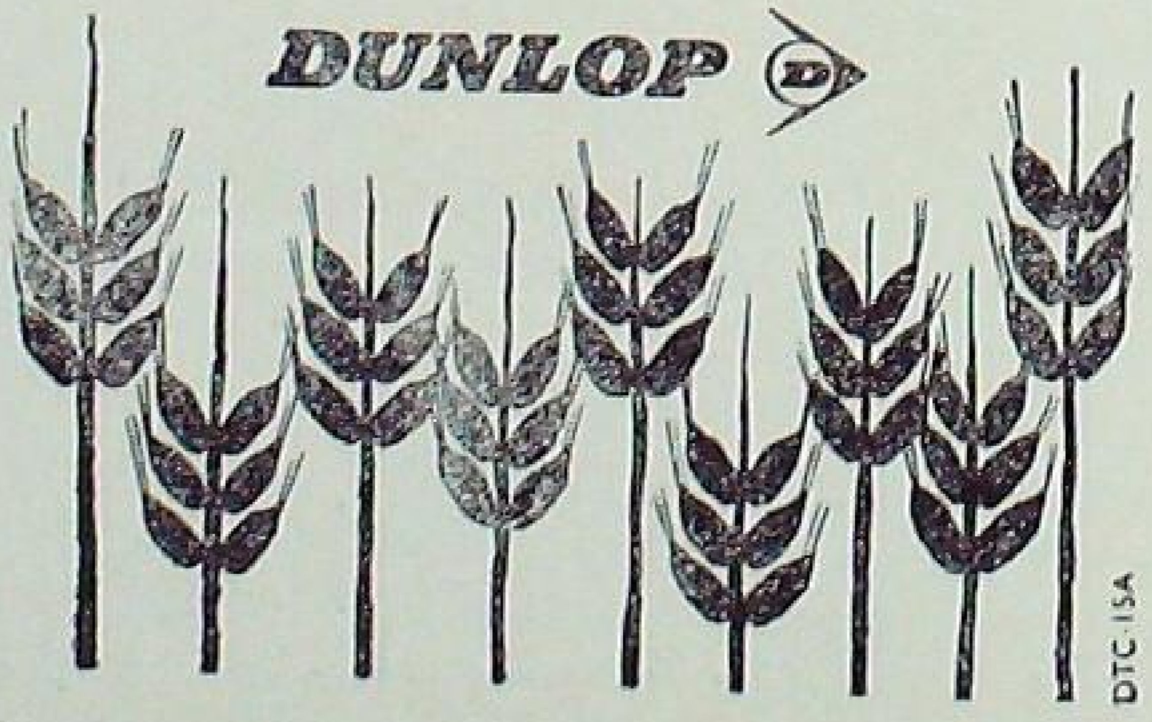
This system of raising seedlings, they can also follow for other crops such as tomatoes, cabbage, cauliflower, lettuce and chillies.

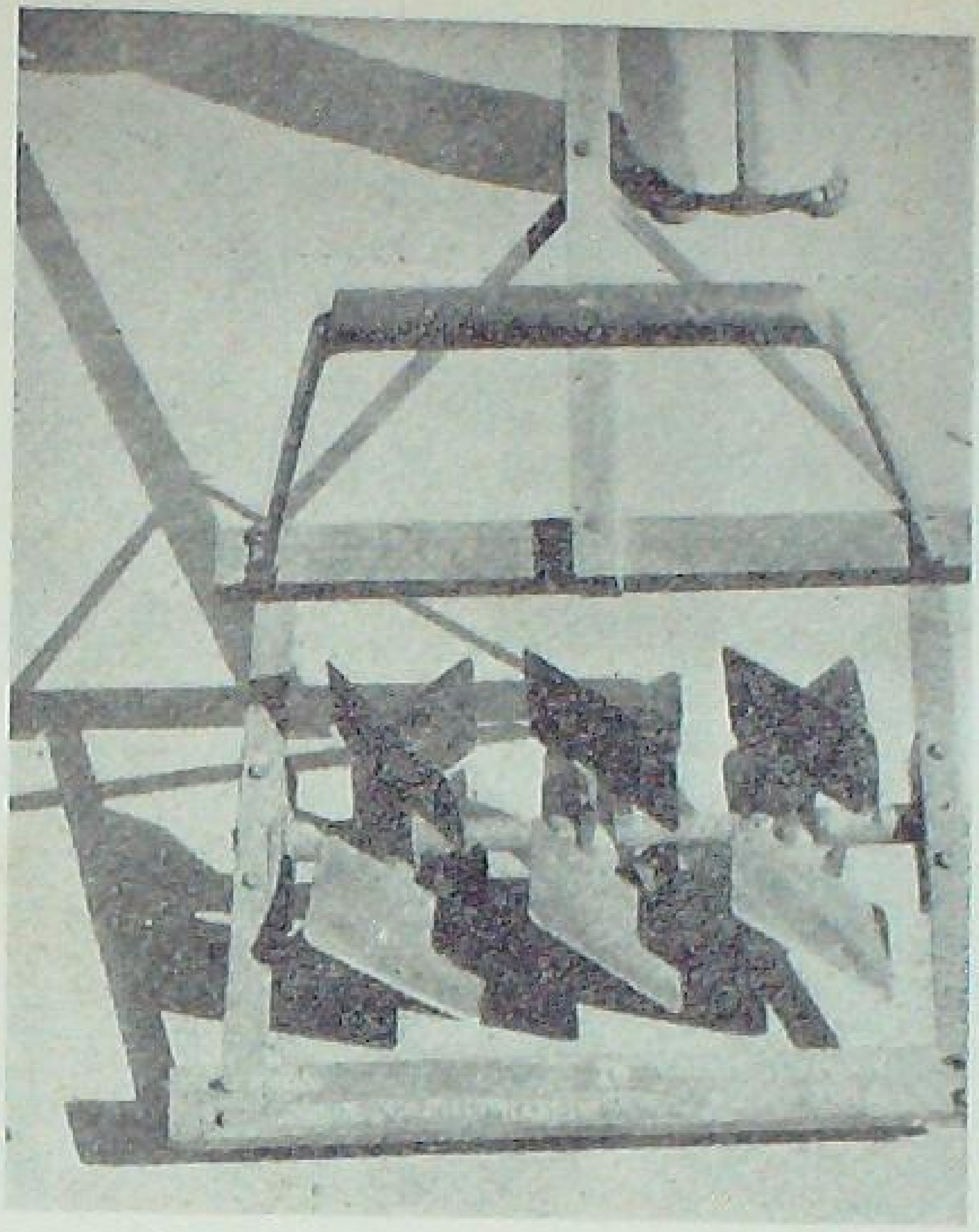
This tyre lowers your farming costs

Tractor farming becomes easier with the Dunlop RT 33 open centre tractor tyre which has more tread bars to give the maximum grip on hard dry soils. This tyre reduces power loss on the tractor and enables a greater acreage to be ploughed per day.

More tractors in India are fitted with the Dunlop RT 33 Tyre than any other make

DUNLOP





By MADAN MOHAN MEHTA

WORK FASTER WITH A PUDDLER

YOUR puddling job in the paddy fields will be quicker and easier with a wetland paddy puddler.

This machine, costing only 65 rupees, has become popular with the paddy farmers of Nainital-Terai region in Uttar Pradesh. With the puddler they are able to finish a puddling job, that normally takes 50 hours with a plough or *patela*, in only 30 hours.

The puddler has three angular bladed cast-iron hubs rigidly fixed on a hollow pipe, each having four blades placed diagonally. These break up the clods and churn up the soil in water. The machine makes a nice puddle.

The implement, which can be fitted either with a rear wooden frame for the farmer to stand on or with a wooden seat to sit upon, can easily be drawn by a pair of bullocks.

The puddler can be worked after the field is ploughed with a soil-turning plough, generally twice.

Buy a wetland puddler for the next *kharif* season. Your State Agricultural Engineer or your Gram Sevak will help you get one.

Why not get better fibre from

JUTE

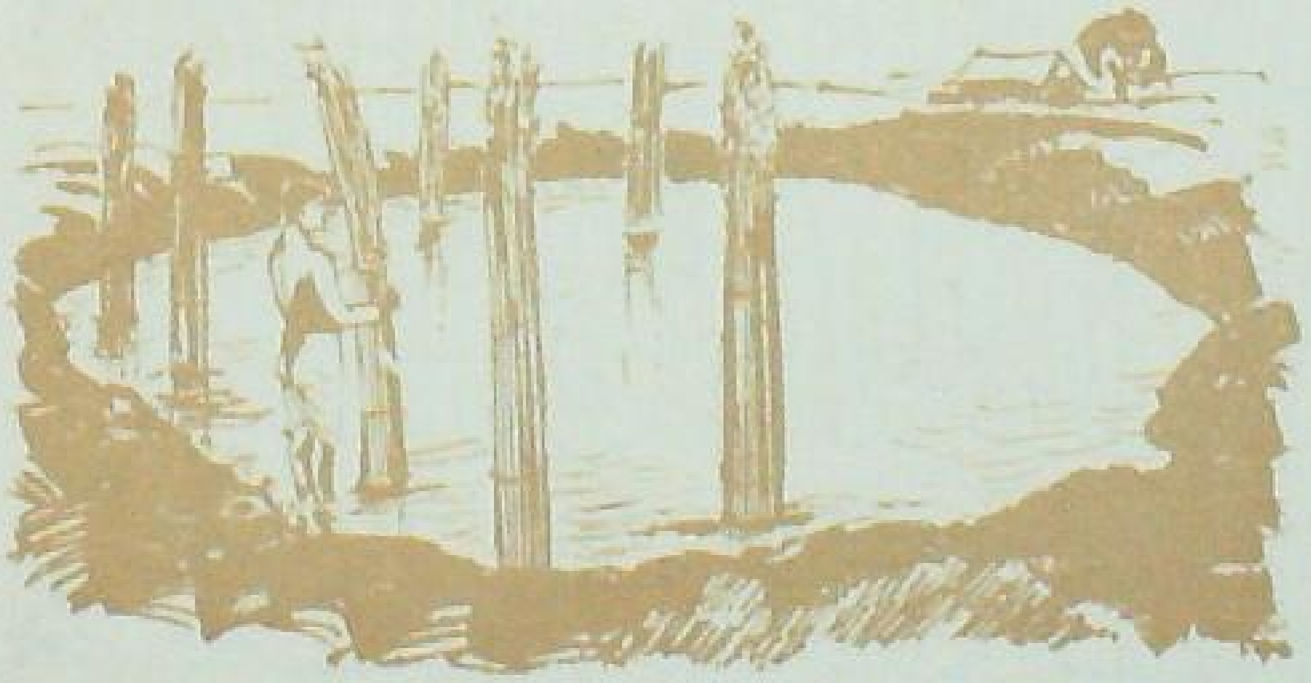
If you grow jute, don't strip in bundles; strip single-retted stems

WITH a few changes in the way you ret and extract your jute, you can get a better quality fibre. A better quality jute fibre has a better market, which means more rupees for every maund of the fibre you sell.

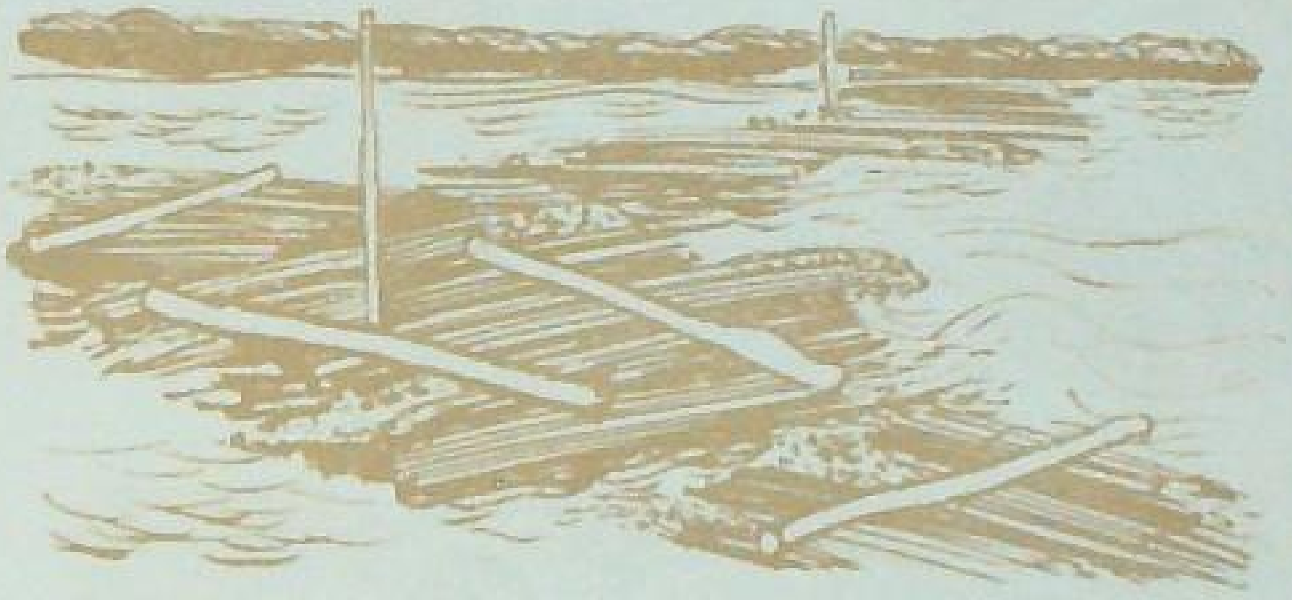
After the crop has been harvested, leave the plants in groups at different places in the field for two to four days. Most of the leaves will shed to serve as a green manure for your field.

Tie up the plants in bundles of about six to nine inches in diameter. Cart the bundles to the place of retting.

If you have raised your jute on low lands, steep the bundles immediately after harvest.



Place the tied bundles of jute stems upright in about two feet deep water for two to three days. This will ensure the bottom hard portions getting the extra retting they need.



Next, lay the bundles side by side flat in water so as to form a platform. If the water is six to seven feet deep, you can put a second layer of bundles at right angles to the first. Cover the bundles with water weeds and put stones or dry logs to weigh them down. Do not use banana stumps or clods of earth for weighing down the bundles. They will give a bad colour to your fibre.

Jute bundles steeped at a depth of six to nine inches in slow-flowing, clear water ret better and give a shiny fibre. Keep the bundles in water for 8 to 30 days, depending on the weather conditions. The retting is quicker (eight to ten days) when the temperature is high.

You may add a small quantity of ammonium sulphate and bone-dust over the jute bundles to quicken retting.

Retting is complete when the bark separates out easily from the jute sticks. Extract the fibre as quickly as possible after retting. Otherwise, the quality of the fibre will go down.

You can extract the fibre from the stalks of retted jute, either bundle-wise or

separately from single-retted sticks. Extracting the fibre separately from single-retted sticks may cost you a little more, but it will give better fibre and the wastage will also be less.

STRIPPING IN SINGLES

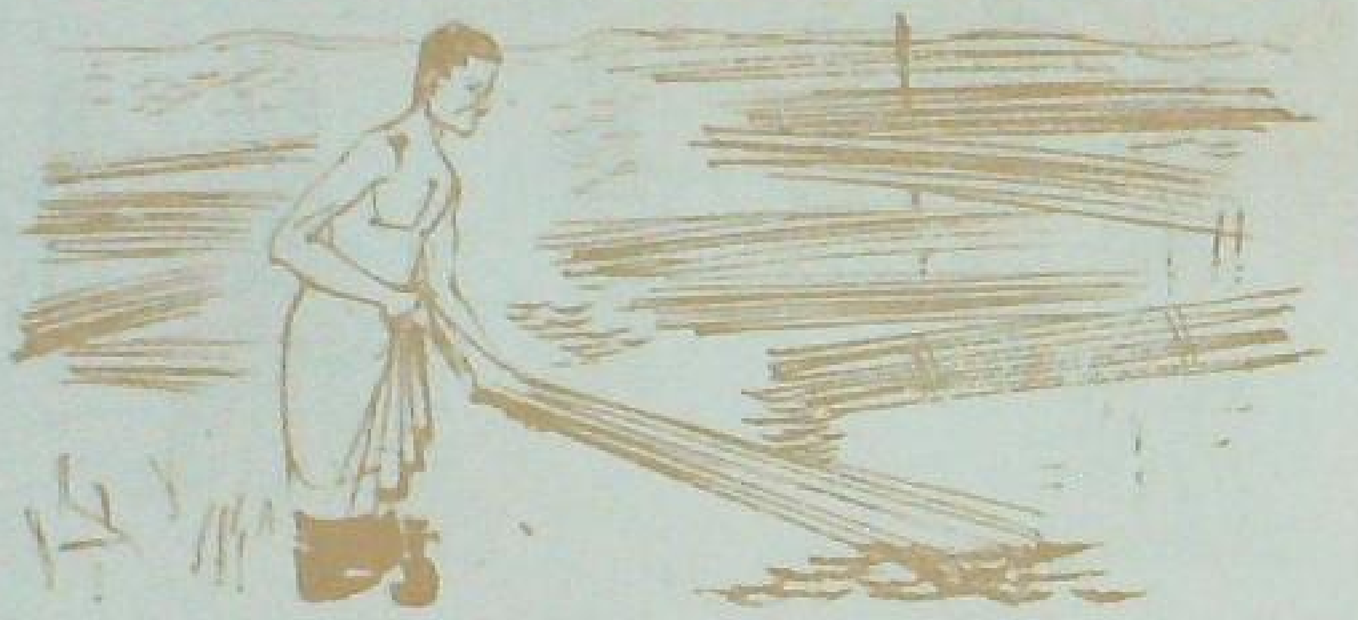
Take two or three retted stems. Clasp round each stem, and slide down your hand to the bottom of the stem, so as to remove the adventitious roots. Loosen the fibre at the bottom of the stem and run the fingers

of the other hand up along the stem, and separate out the fibre.

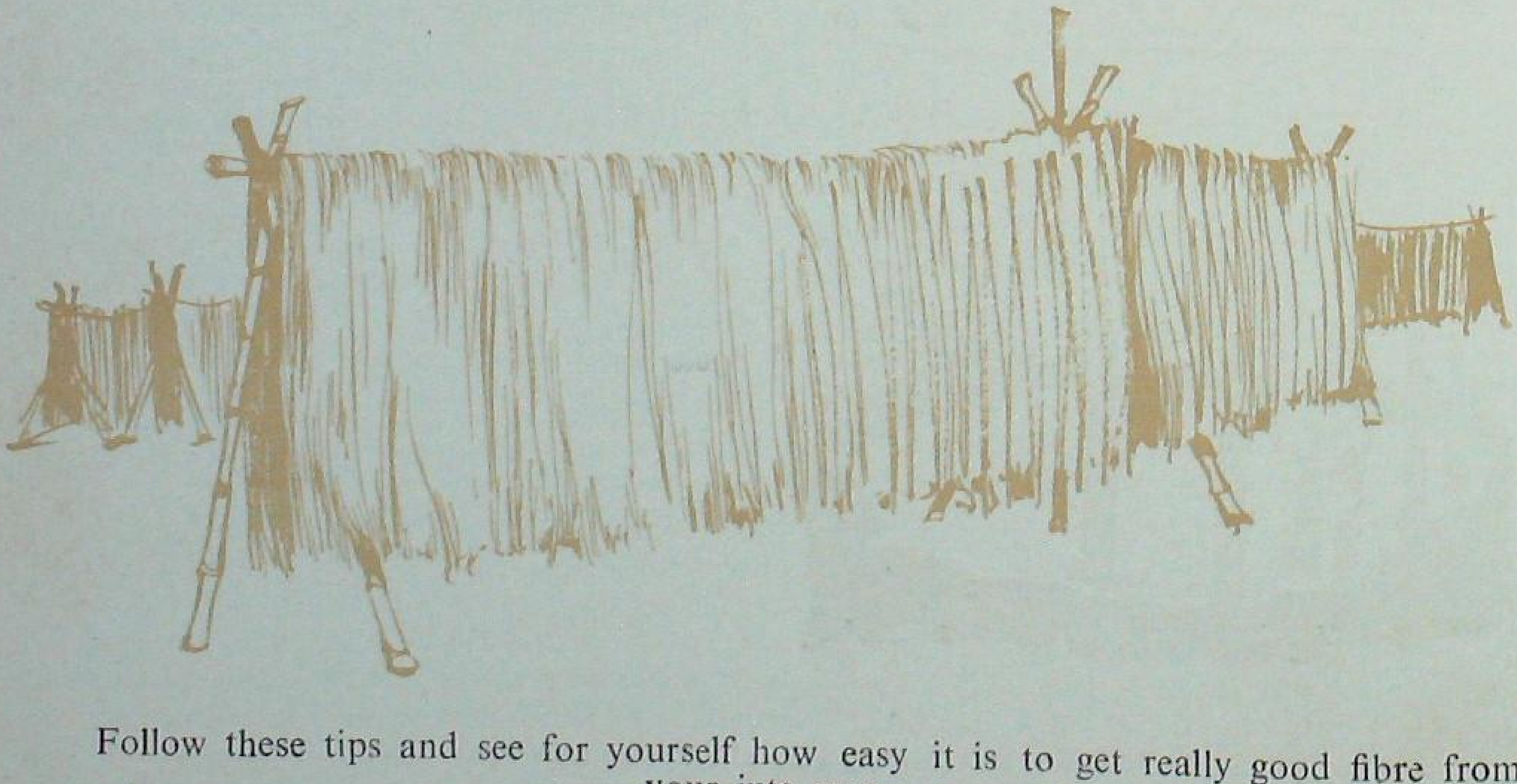
When you have separated a handful of fibre, wash it clean in water and send for drying.

STRIPPING IN BUNDLES

Take a handful of the retted stems in your left hand. Beat them gently on the water surface with a wooden or bamboo mallet round the base of the stems. The fibre at the base of the stems is thus loosened. Break the woody core of the stem by pressing it (at about one to two feet from the base) against your knee. Take the jute sticks out of the bottom portion. Hold the loosened



fibre at the end and keep the sticks flat on water. Separate the fibre from the sticks by giving backward and forward jerks. Spread out the fibre on the surface of water. Pick out sticks or dirt if any. Wash it clean and send for sunning.



Follow these tips and see for yourself how easy it is to get really good fibre from your jute crop.

Here's a gas plant for your home

INSTAL a cowdung gas plant in your home. Feed it with cowdung, and you get a gas from it which will burn as fuel, and you will also get back the cowdung residue for use as manure.

This gas plant, cheap to construct, thus serves two purposes : fuel and manure.

At present, a good part of the cowdung produced in our villages is used as fuel, thus depriving the fields of good manure. Experts say that almost half of the cattle manure produced in our country is burnt away this way.

Village type cowdung gas plants have been set up by many villagers, who have found the gas produced by these, serves as a good fuel for doing all cooking. They are also using the residue as manure for their fields.

The gas enables the housewife to do clean and quick cooking, which means a cleaner kitchen and home. The gas burns, giving a smokeless blue flame.

If you put 100 pounds of cattle dung (which you can have from three or four animals) in the gas plant, you get enough gas for cooking meals for a family of five. You can use the gas for lighting also.

The residue, or what is left of cattle dung, is richer in manurial value than what it was when it was put in.

There is no smell or any fly-breeding problem.

HOW IT WORKS

When dung or any such organic matter ferments in the absence of air, it produces a gas called methane which can burn.

In the village model gas plant, the tank in which the dung ferments is a brick-lined well, 12 feet in depth and 6 feet in diameter which is filled with slurry (cowdung mixed with water). This is covered with an iron drum, four feet high and five feet in diameter, put in an upside-down position in the well. This cuts off the air, and allows the slurry to ferment. The gas produced bubbles inside the covered drum, which makes the drum float and rise. From the opening in the drum the gas comes out which is taken to the kitchen by tubes.

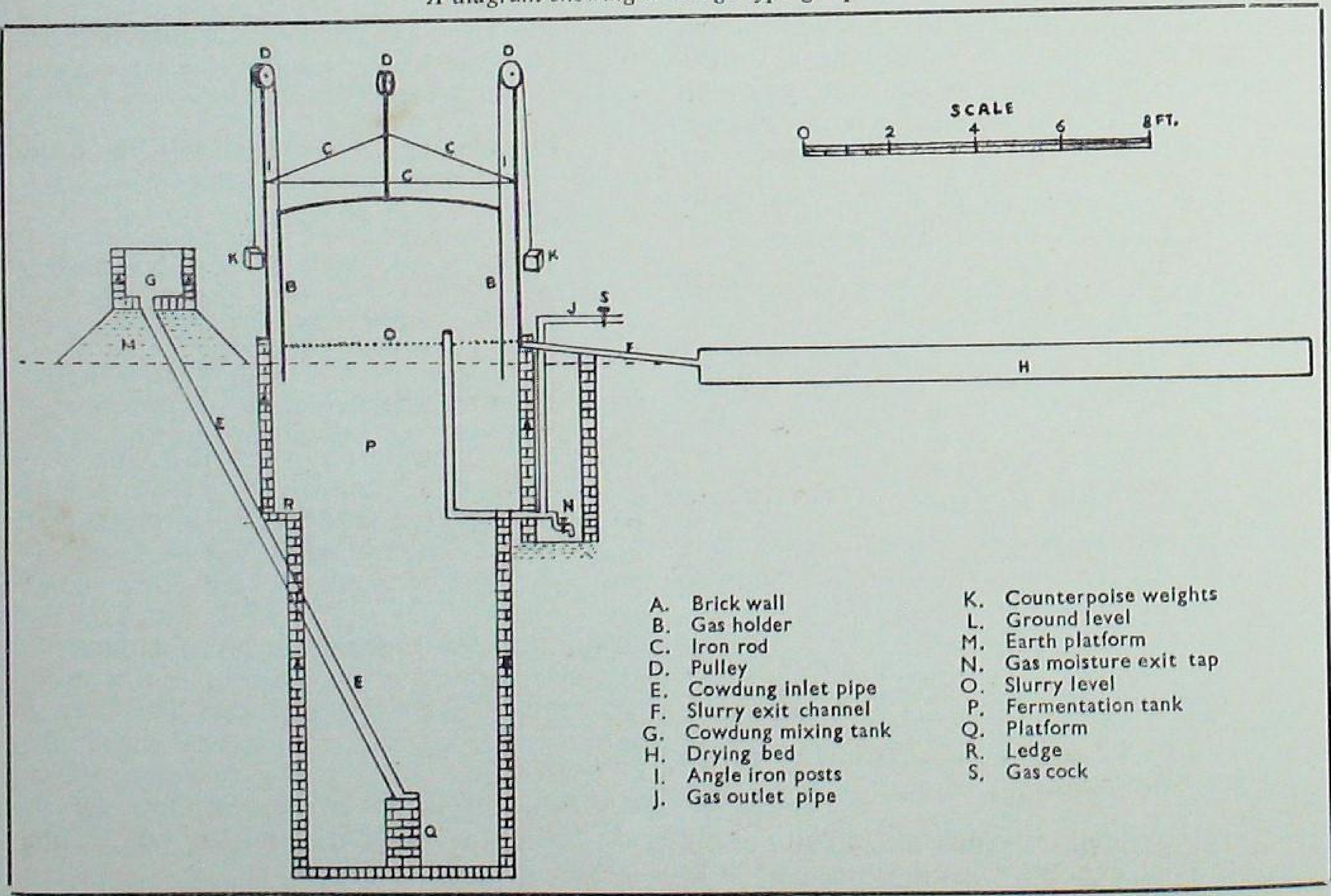
Everyday you feed the well with fresh slurry. This you pour through the funnel pipe which carries it to the bottom of the well. The used-up slurry overflows from the top of the well and gets collected in a pit from where it is removed for use as manure from time to time.

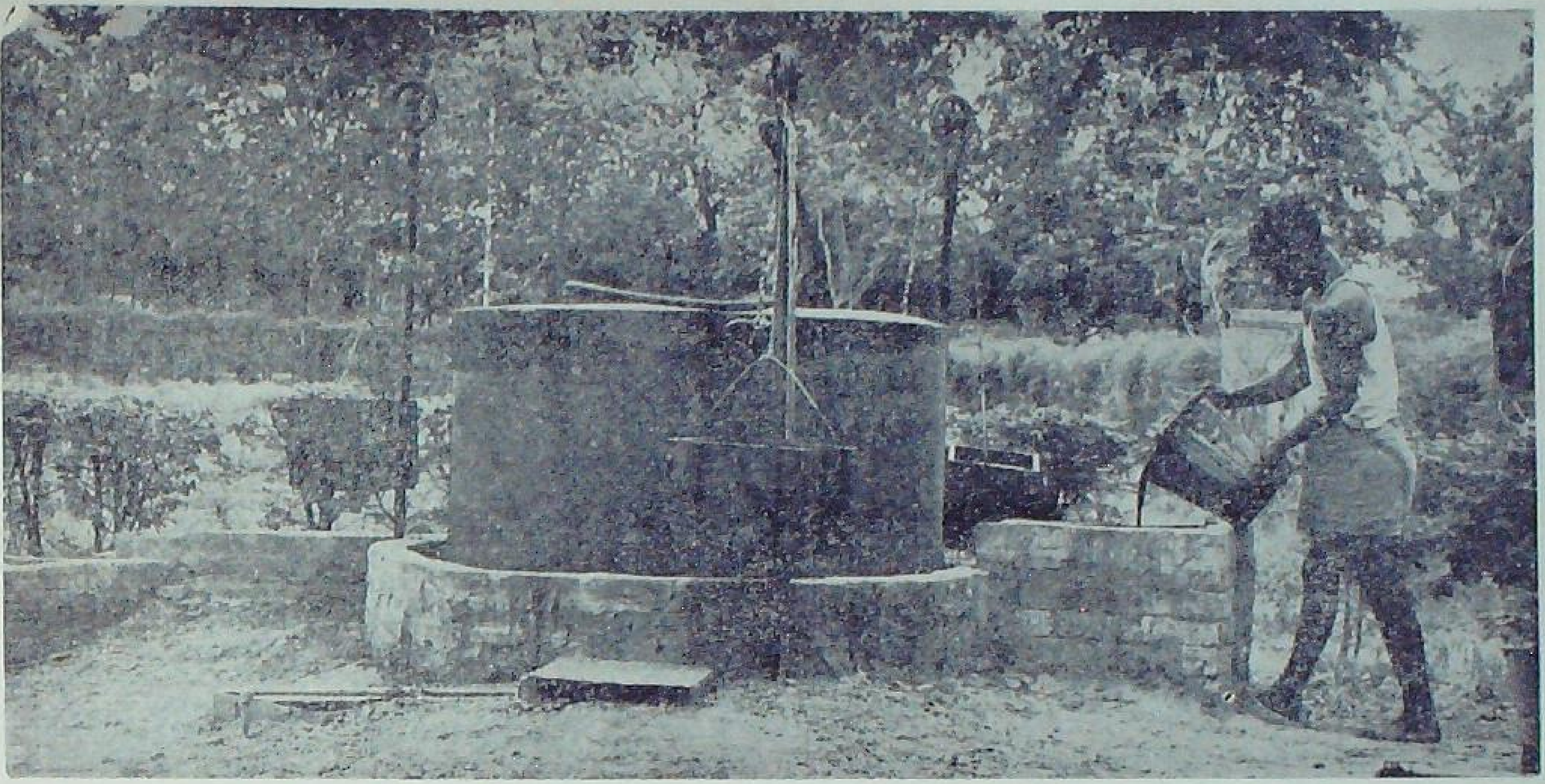
MATERIALS NEEDED

For making a cowdung gas plant you need the following materials :

1. One Drum (Gas holder)	5 feet in diameter, 4 feet in height, made of 16 G.M.S. sheets, open at one end, with three handles fixed at equal distances around the closed end of the drum, and an iron rod ½ an inch in diameter bored on the top of the drum about 9 inches from the edge, and a nipple—an inch in diameter and 4 inches long welded all round this hole.
2. Three-angle Iron bars	1½ inches wide on each side, 12 feet long, bent at right angles at a place 15 inches from one end, with shafts screwed on two sides. Alternatively — three wooden *ballies* ab-

A diagram showing a village type gas plant





This village type gas plant will provide you with both fuel and manure

out 4 inches in diameter and 10 feet long with a 2-inch broad and 10-inch long slit sawed out in the centre at one end.

3. Hose pipe of 3/4-inch in diameter and 8 feet in length.

4. Three iron pulleys, each of 7 inches diameter.

5. G.I. twisted six-ply wire of 3/8-inch diameter and 45 feet length.

6. Three wooden boxes, each having inner dimensions of 15 inches by 10 inches by 12 inches.

7. Feeding pipe 10 feet long and 4 inches square of 22 G.I. sheet.

8. G.I. pipe, $\frac{1}{2}$ inch in diameter and 30 feet long.

9. G.I. pipe, $\frac{1}{4}$ inch in diameter and 1 foot long.

10. Four pieces of G.I. elbow, $\frac{1}{2}$ inch.
11. One G.I. socket, $\frac{1}{2}$ inch reduced to $\frac{1}{4}$ inch.

12. One G.I. Tee, $\frac{1}{2}$ inch by $\frac{1}{2}$ inch by $\frac{1}{2}$ inch.

13. Four pieces of G.I. socket, $\frac{1}{2}$ inch.

14. Three bolts and nuts, each $\frac{1}{2}$ inch in diameter and 6 inches long for the pulleys.

15. One wheel cock, $\frac{1}{2}$ inch.

16. One water tap for $\frac{1}{2}$ inch pipe.

17. One rubber tube, 3/8 inch in diameter and 8 feet long.

18. One G.I. bend, $\frac{1}{2}$ inch.

19. One iron sheet, 2 feet square.

20. One burner.

(FOR THE GAS PIT)

21. Bricks (second quality)—1,600 (for constructing the pit, drying beds, etc.).

22. Cement 1 Cwt.
(For lining the bottom of the tank, to fix the angle-irons, etc.).

23. Sand (10 c. ft.) and *rori* (broken stone)—5 c. ft.

INSTALLING THE PLANT

Select a high land near your cattle-shed and fairly close to your kitchen for installing the plant. Dig a circular pit seven feet in diameter to a depth of four feet. Leave a ledge 'R,' nine inches all round the pit. Continue digging the pit with a diameter of 5½ feet to a further depth of 8 feet.

Line the floor of the pit with bricks and plaster it with cement.

Line the walls of the pit with bricks to a height of six feet from the bottom.

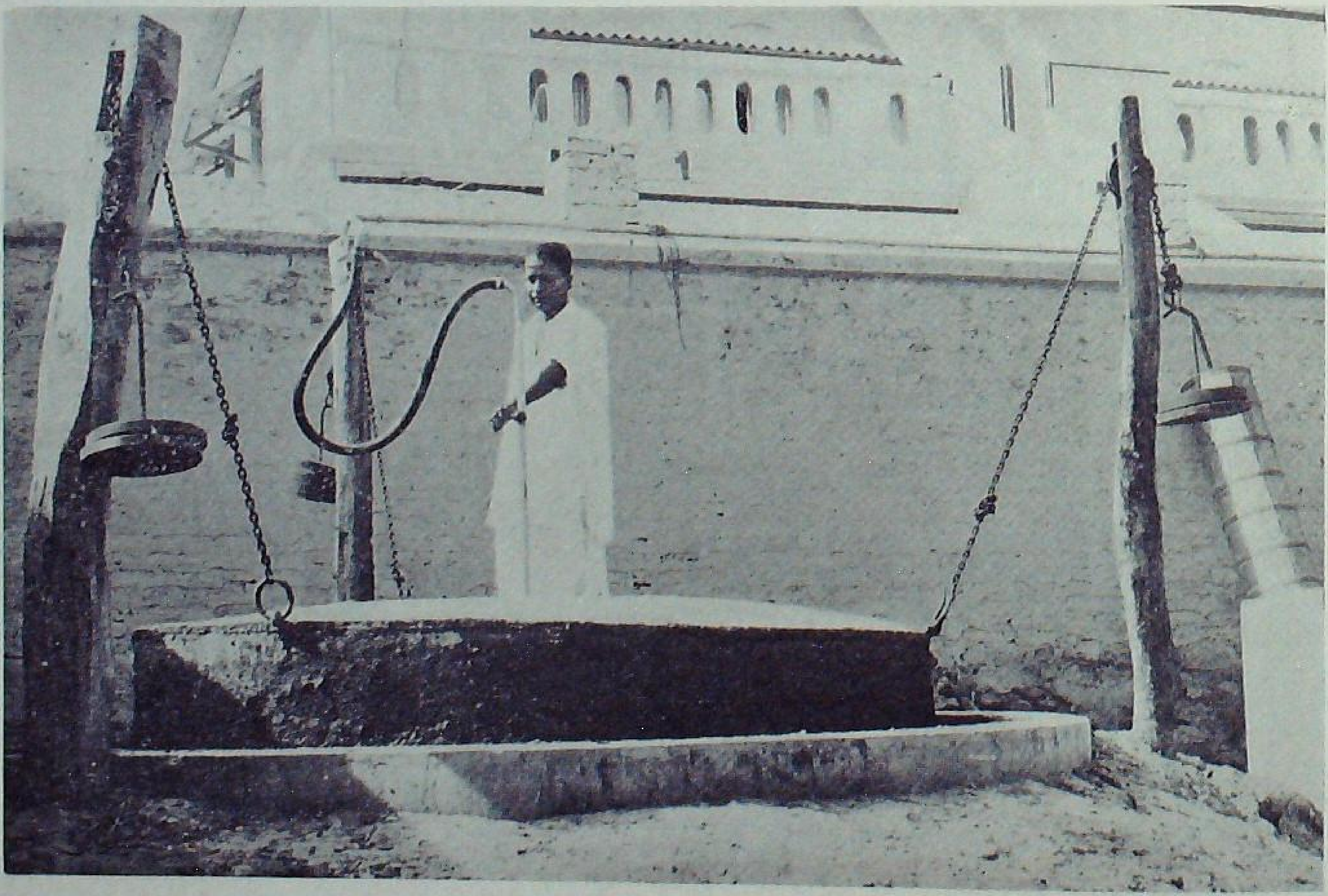
At this height of the pit, dig a sloping channel eight inches wide and coming up to the top at a distance of three feet from the rim of the pit. In this sloping channel, fit the feeding pipe 'E' with one end just emerging into the pit and the other end about 1½ feet above ground level.

Continue the brick-lining of the pit and finally raise the brick wall six inches above ground level.

Leave a drain 'F' at the top for carrying the digested slurry to the drying bed 'H', or a pit.

Construct a square brick tank, two feet by two feet, where the feeding pipe comes out of the ground and allow the end of the pipe to emerge inside the tank. Fill the tank with sufficient earth and then floor with bricks

Why not instal such a plant in your home and save 100 pounds of cattle manure per day !



and finally plaster with cement. Flush with the bottom side of the opening of the pipe.

Dig another small pit 'N' having an inner dimension of nine inches by nine inches and one foot deep, just outside the bigger pit. This will serve as a water-catch for removing condensed moisture from the gas pipe 'J.' Fill up the brick-lined pit to the top with dung slurry. Introduce the drum for holding the gas at the top of the pit. See that it rises up to the ledge 'R' on which it rests, the trapped air escaping through the nipple. Fix three angle-iron bars or alternatively wooden *ballies* with pulleys on the top at equi-distant points outside the brick wall of the pit. The angle-iron bars or *ballies* should be six feet high above ground level.

Tie three wooden boxes 'K' to 12 feet long twisted wires passing over the pulleys. Tie the end of each wire to one of the three handles of the drum. Load eight bricks in each wooden box to counterpoise the weight of the drum. Connect the nipple of the drum by a six-foot hose pipe to the bend on the top of the gas pipe 'J.' Fix the gas pipe with wire to the angle-iron bar or *bally*.

OPERATING THE PLANT

While filling a new pit to the top with cowdung slurry, get about a dozen buckets of fermented slurry from a fuel gas plant already working near your place. If there is none in your area, add sewage water or tank mud as a starter for gas formation.

Production of gas normally starts within a fortnight. The gas production is higher in summer than in winter. To begin with, keep the gas cock closed. Due to the accumulation of the gas inside the drum, it will rise up with the support of the loads in the wooden boxes. When you require the gas for use, remove the bricks from the boxes. The gas will be forced out through the outlet pipe by the pressure of the drum. Open the gas cock and burn the gas in the kitchen through a suitable burner.

After the gas has first formed, you can maintain the production by feeding about 100 pounds of dung as slurry through the funnel every day.

After the escape of gas, the slurry passes out into the drying bed 'H' and is spread there in layers for drying.

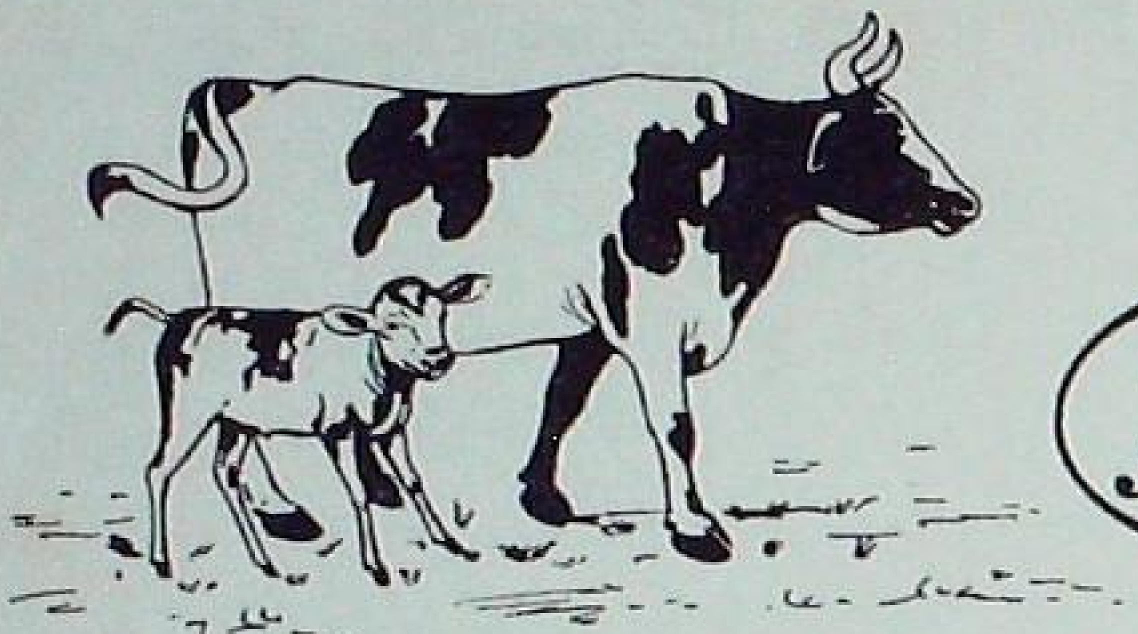
The dried slurry is an excellent manure. You can apply it to all types of soils and to any crop with profit. You can also add this slurry to the compost heaps or pits, especially during the rainy season. Mixed with straw or other refuse, it will yield a good bulky organic manure for your crops.

WHAT THE PLANT COSTS

The cost of installing of such a village gas plant, sufficient for a family of five members comes to about Rs. 350. You don't need to spend any money on its day-to-day maintenance. With this plant, about 100 pounds of cattle dung normally used for burning will be saved. A saving of 100 pounds of cattle dung per day will mean 12 to 15 tons per year. The value of the dung thus saved comes to Rs. 150 per year. The gas produced can be easily valued at Rs. 180 per year which is available to the farmer free of cost.

In case you find any difficulty in procuring the materials and installing the plant yourself, you can purchase one.

For healthier cattle and increased milk yield



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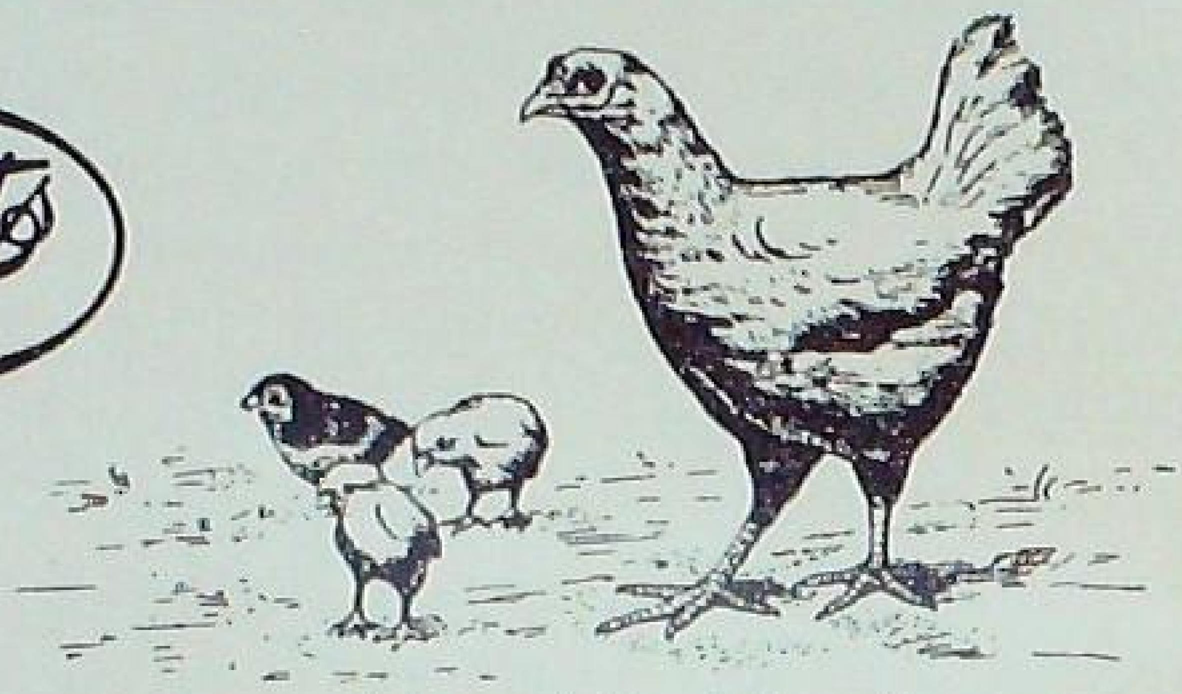

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BETTER FARMING TIPS

NITROGEN FOR SUGARCANE

BETTER results can be had from the sugarcane crop if it is given nitrogen in both organic and inorganic forms, rather than in the inorganic form (as ammonium sulphate) alone, research at Coimbatore in Madras State shows.

In the State, a high dose of 200 to 250 pounds of nitrogen is recommended for sugarcane. Of this, it is pointed out, one third is to be supplied in the organic form such as an oil-seed cake like groundnut cake, and the rest as a fertilizer like ammonium sulphate.

This is to be applied in two doses; the first dose comprising 500 pounds of groundnut cake and 325 pounds of ammonium sulphate is to be applied 75 to 80 days after planting, and a second similar dose to be applied 125 to 140 days after planting.

The crop should, in addition to nitrogen, also receive phosphate and potash to give the best yield. Normally, 60 pounds of phosphoric acid and 80 pounds of potassium is the dose advised. This is to be applied at the time of planting sugarcane.

RIDGING IN PADDY

RIDGING the rows of paddy plants in the field has been found to give a higher yield of paddy per acre, in an experiment conducted at the Indian Agricultural Research Institute, New Delhi.

The crop for the experiment was raised in a sandy loam of average fertility.

The ridging of the crop was done with a hand-ridger 45 days after the crop was transplanted.

The ridged crop gave an acre-yield of nearly 68 maunds of paddy as against 62 maunds from plots in which no ridging was done.

SEMILOOPER AND MITE OF JUTE

IF YOU are a jute-grower, you would have surely come across two of its worst enemies—the semilooper and the mite.

Of course, it is rare that you find them attacking the crop together. It is the one or the other you come across in your jute field.

The semilooper is the caterpillar with short, black hair on it, feeding on the jute leaves, especially during the period from early July to mid-August.

You can get rid of this semilooper by spraying DDT wettable powder (0.75 per cent actual or 'Endrex I.C.' 0.03 per cent actual). See to it that the spray covers the entire plant. When you use 'Endrex,' make sure that this insecticide does not fall into water in which you are raising fish.

The yellow mite, the other pest, is a small pest that sucks the juice of the leaves of the plant. Affected leaves curl up, turn coppery and later deep green, and drop off. The crop does not grow to its normal size, as a result.

To get rid of this pest, apply lime sulphur dust in the proportion of 3:1 on the undersurface of affected leaves. If necessary, follow up with another dusting after 48 hours of the first one.

A NEAT LITTLE FROCK FROM AN OLD SHIRT

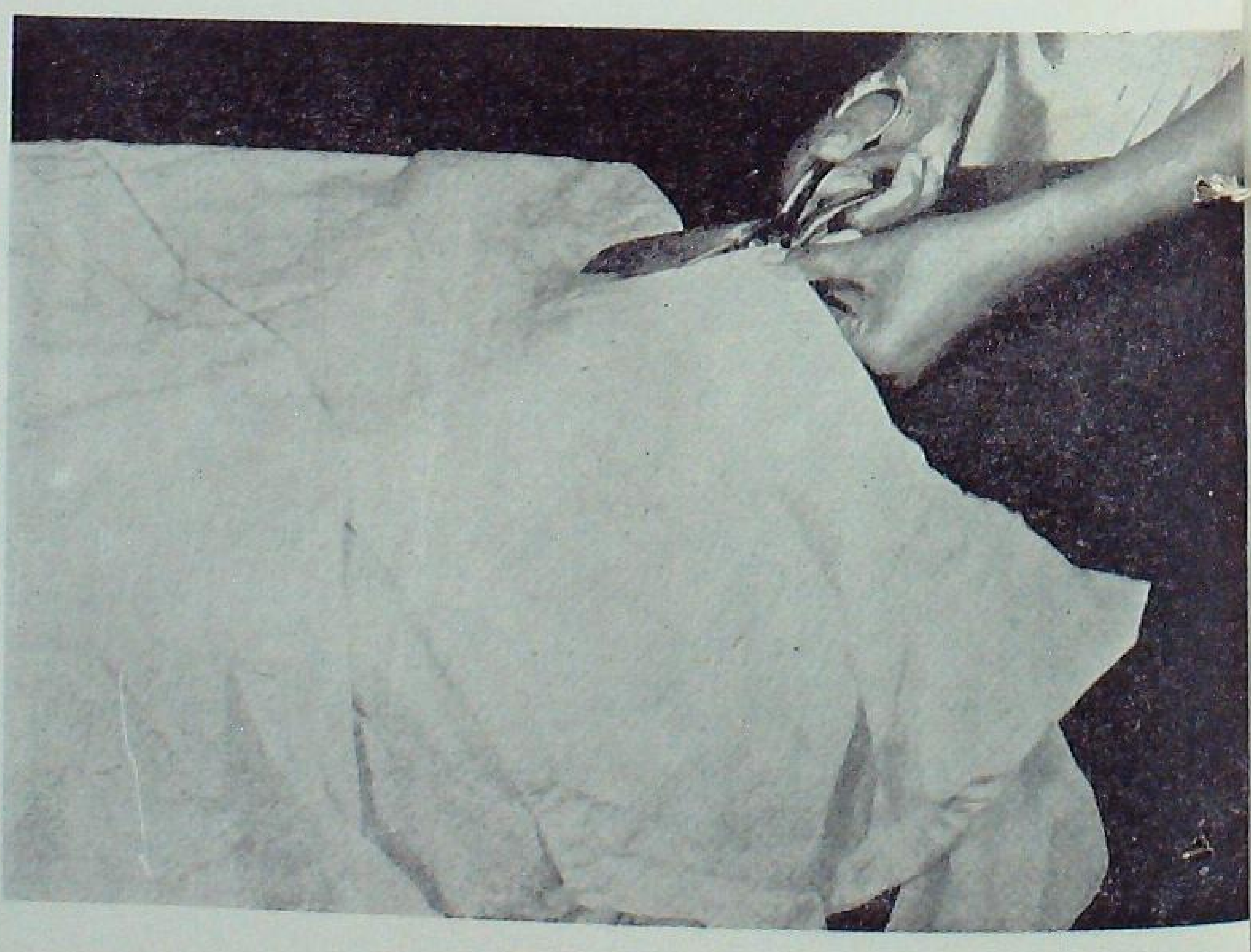
By DOLLY DAVID

YOU can make an easy-to-put-on and easy-to-take-off frock for your baby up to about a year in age, from an old shirt. You will find the frock good as a summer wear for the baby.

This is how you prepare the frock :

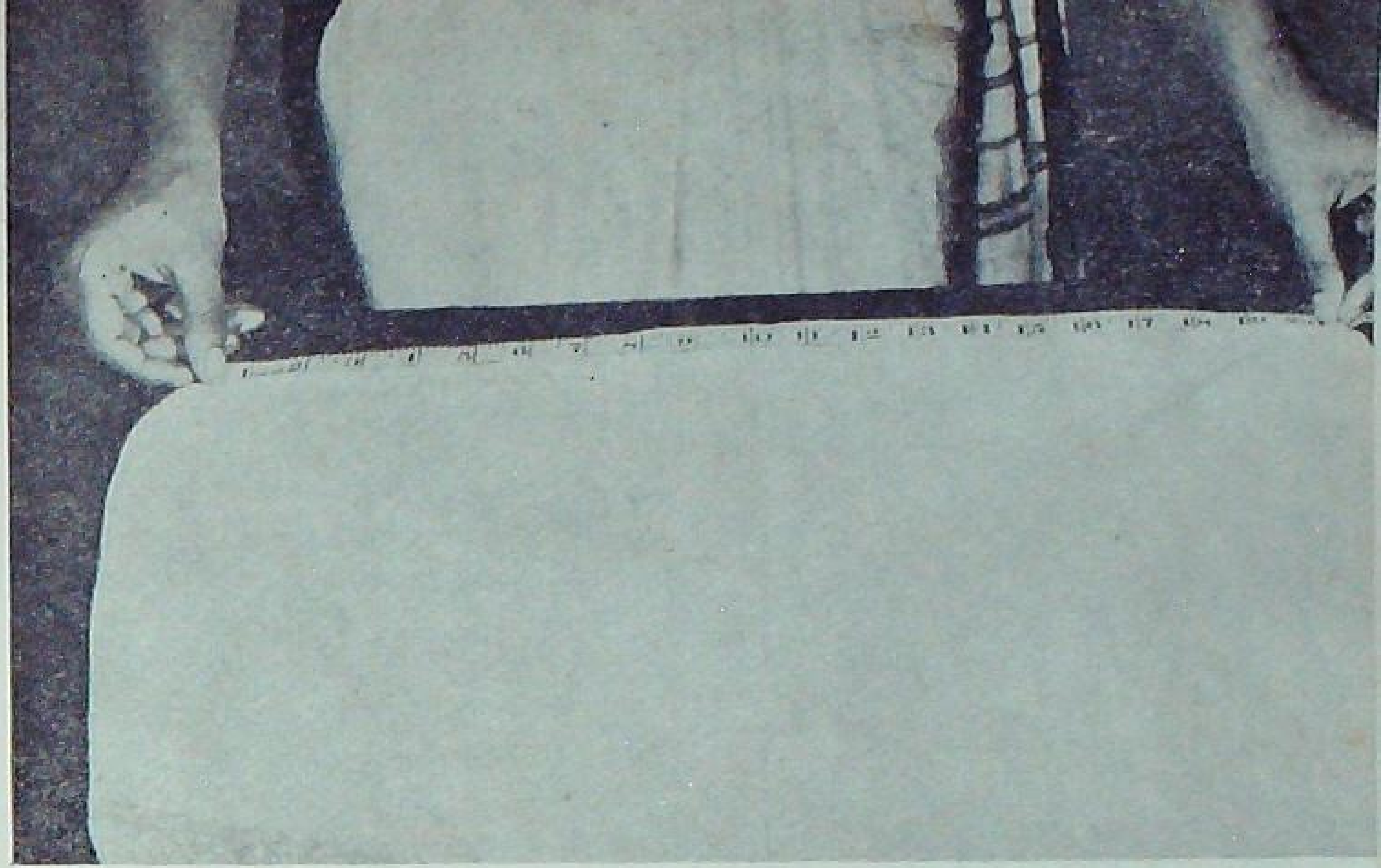
Open out an adult's old shirt that has an opening, upto the waist only.

Cut out the lower half of this shirt and place the two pieces together.



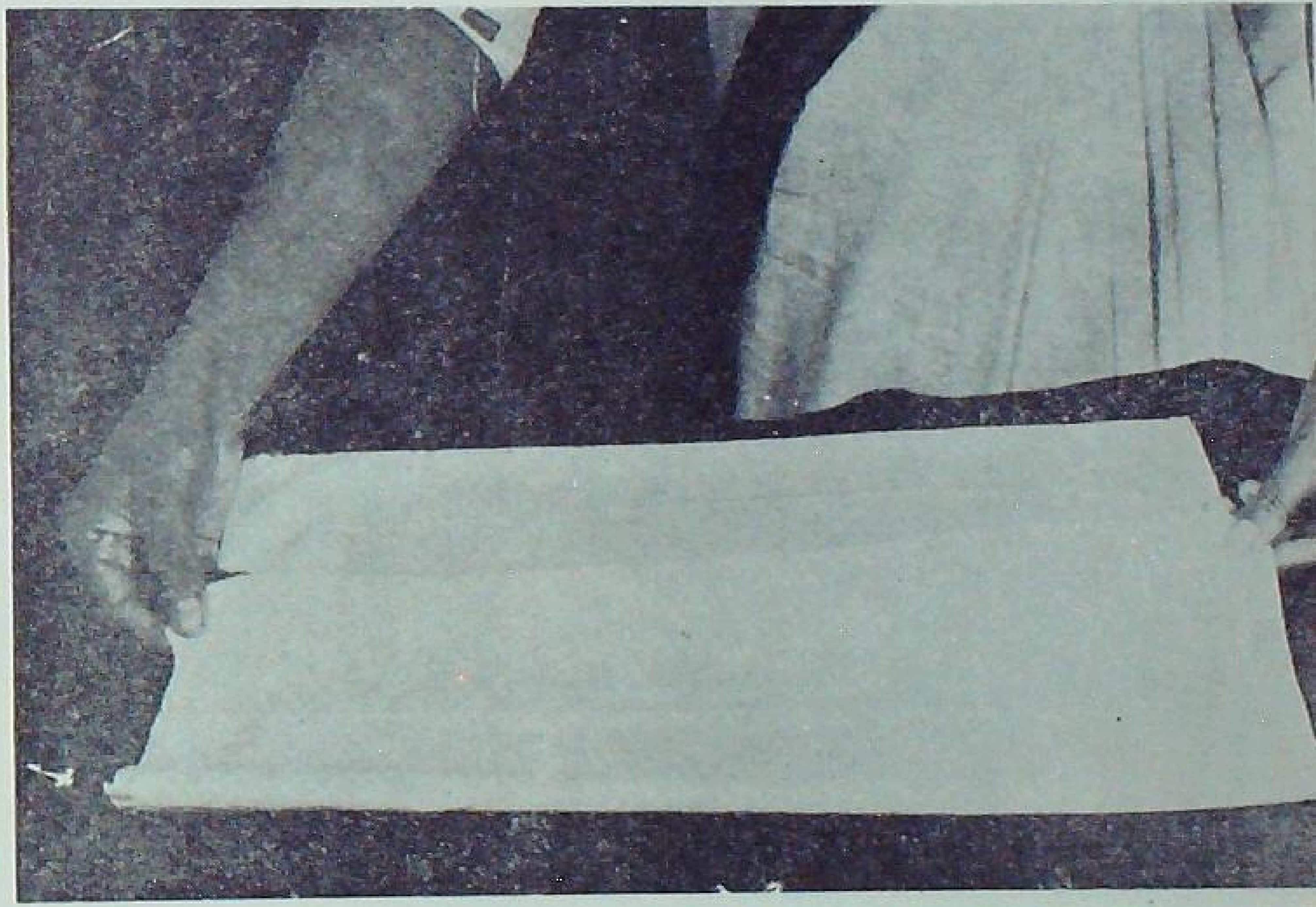
Measure and cut out 20 inches along the weft side.

Measure and cut out 12½ inches along the selvedge side.

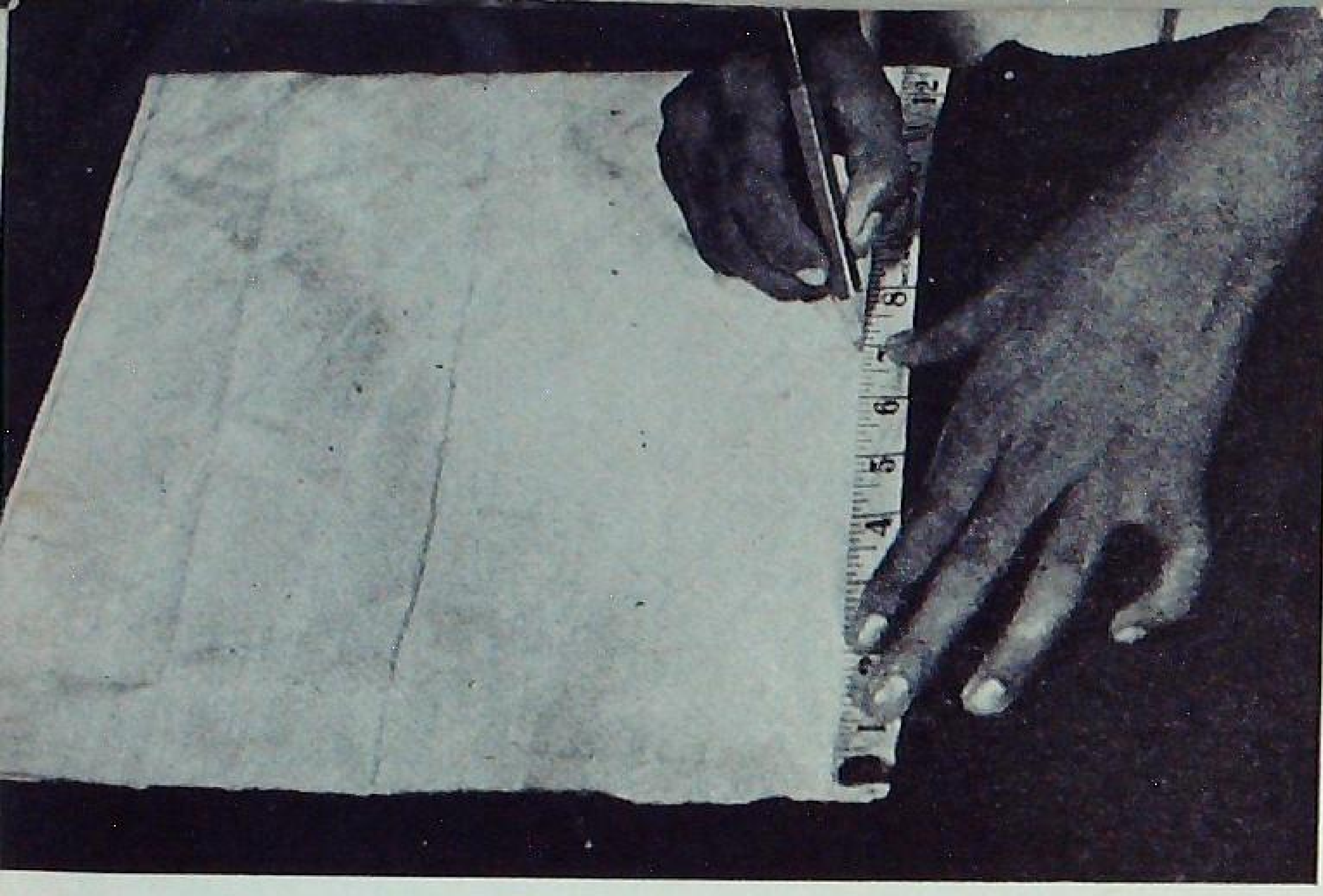


Join one side of the selvedge edge; the other side is open.

You now have one long piece of material 40 inches by 12½ inches (with a join in the centre).



Fold the width quarter-wise inwards on either side, so that the open selvedge sides fall over the join in the centre.

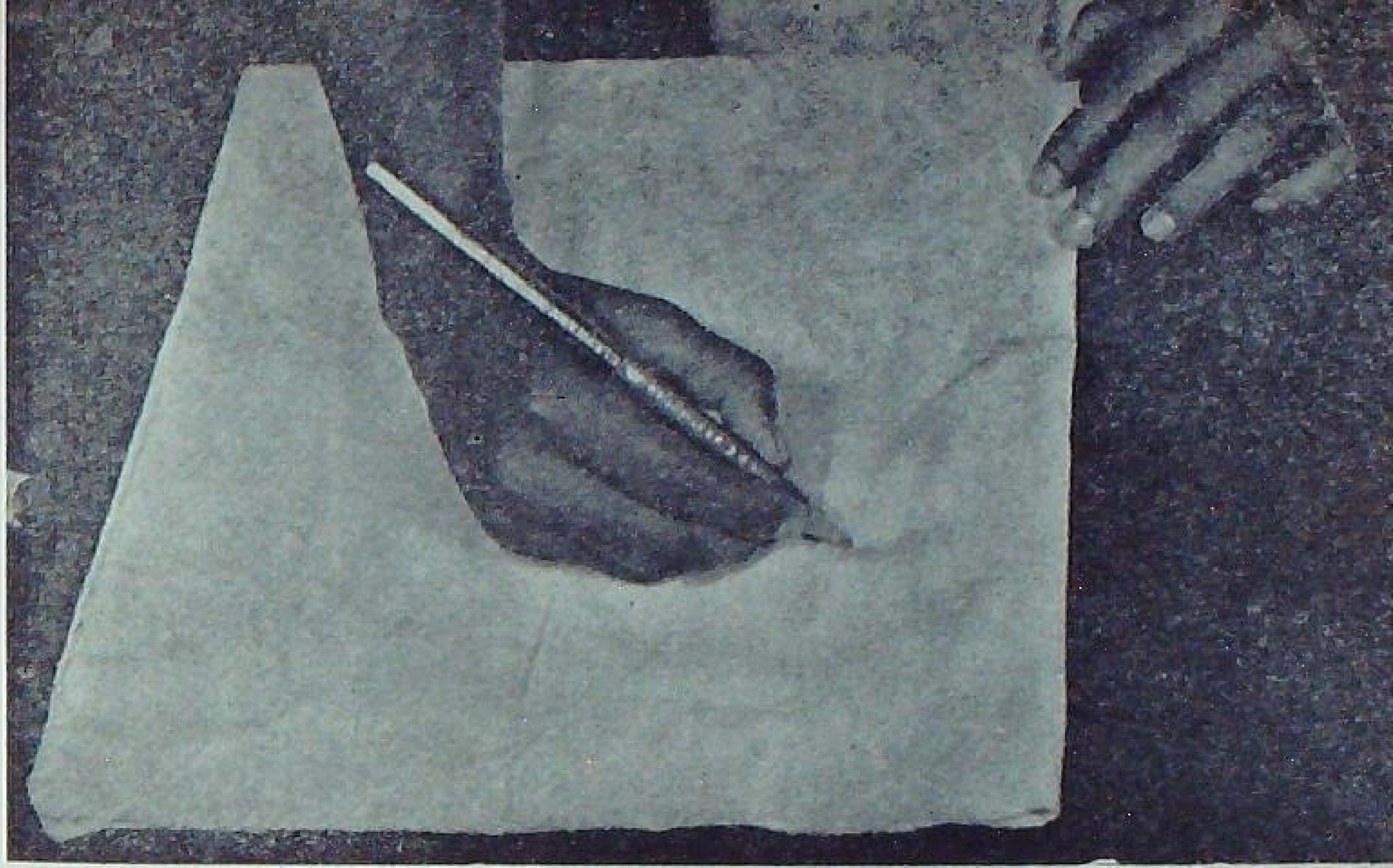


On the right-hand folded selvedge side measure seven inches from the lower broader edge. This forms the first point.

Measure three inches downward from this point. This is the second point.

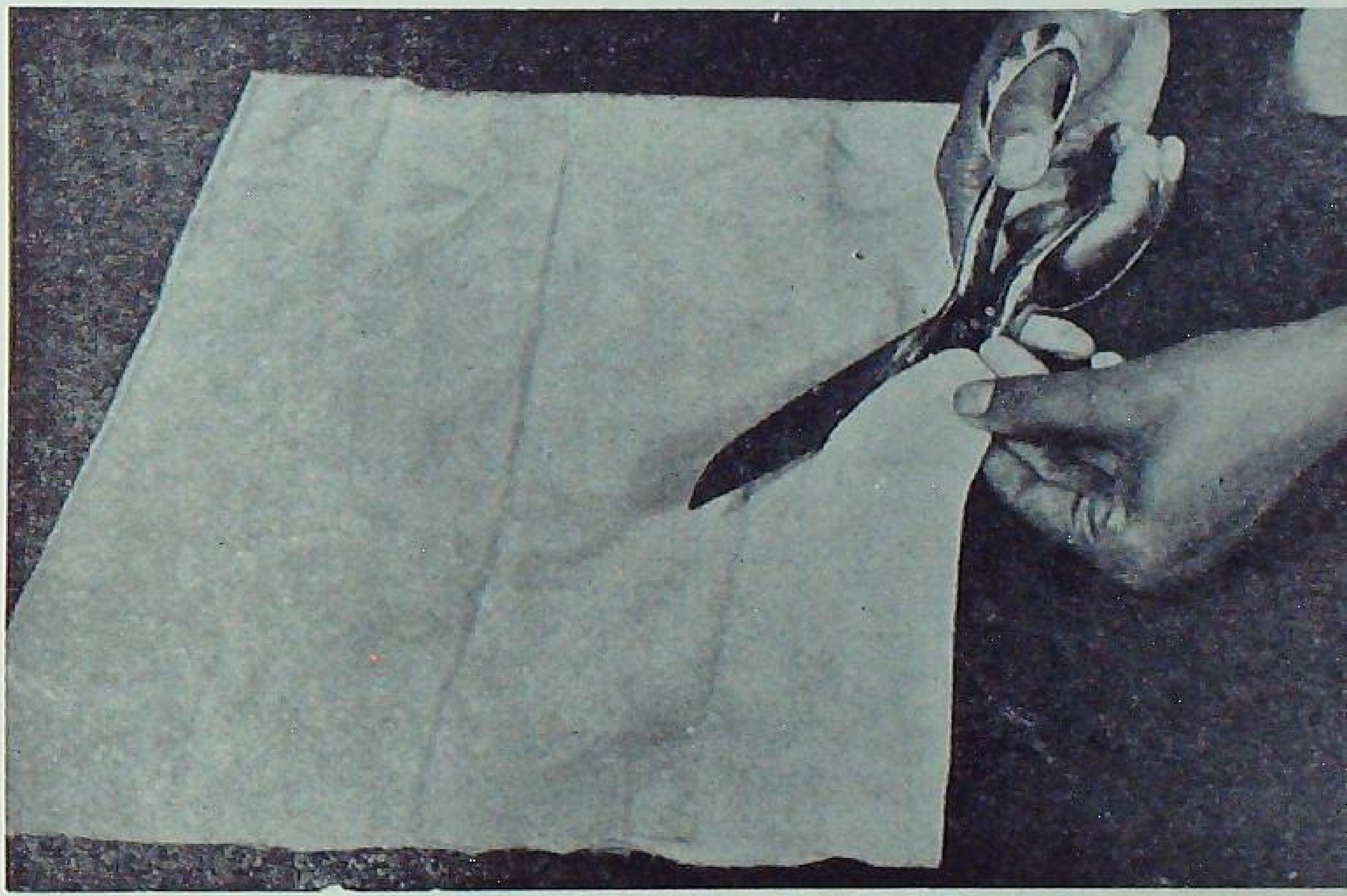
From the second point measure $2\frac{1}{2}$ inches across weft. This is the third point.

Join the first and the third points with a curve.

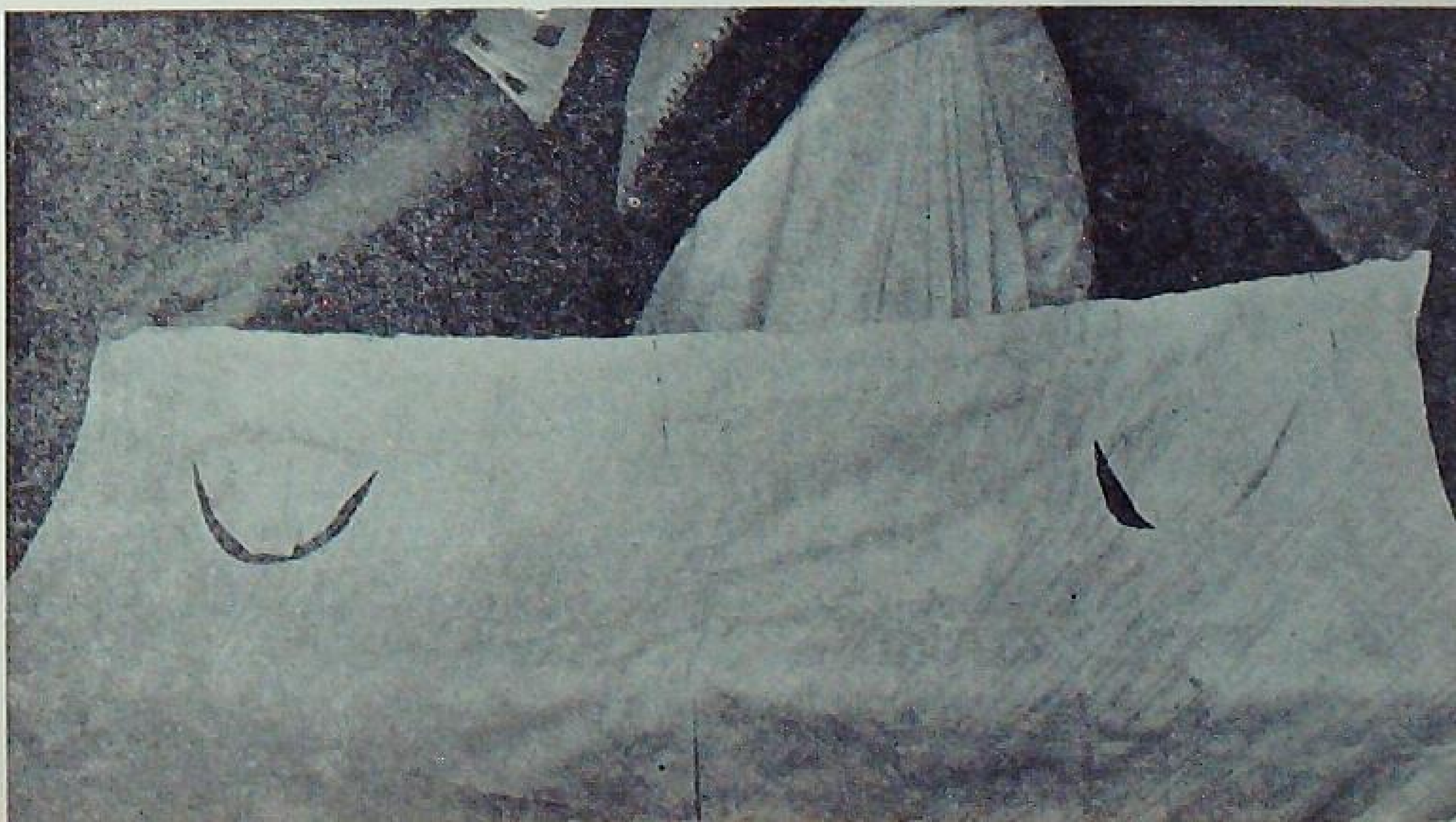


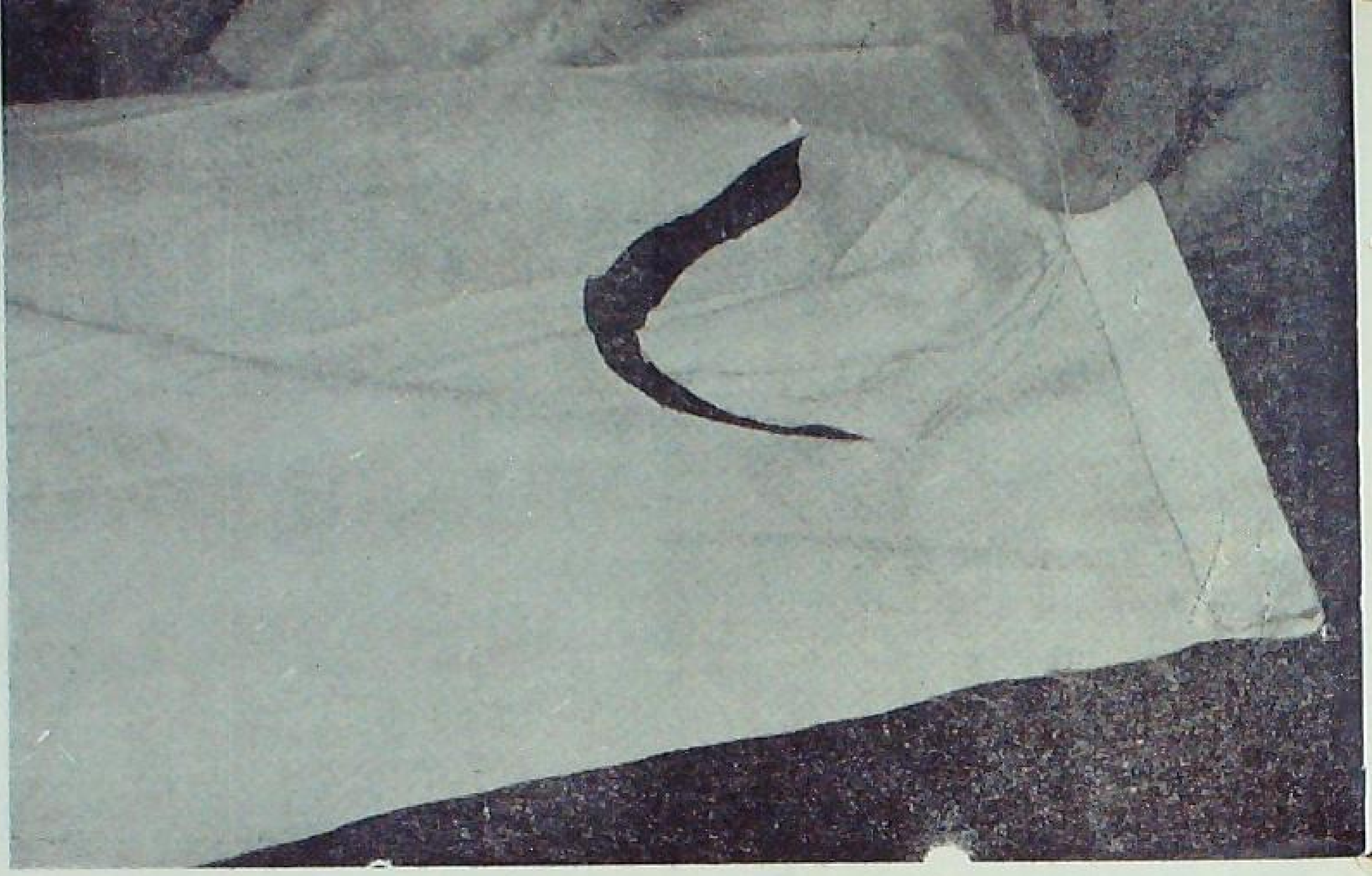
Cut along the curve.

Follow the same procedure for the left-hand side of the selvedge fold.



Open out the whole piece after cutting out the curves.





Make a $1\frac{1}{2}$-inch fold on the top. Hem right round for putting in the tape.

Make a hem round the sleeve. Attach a lace on this hem.

Hem the armhole portion of the sleeves. Repeat for the next sleeve.

Fold and hem the opening at the back.

Fold and hem the lower edge. Attach a lace on this lower hem.

Attach bows in the centre of the frock and on sides of the shirt and also on either shoulder.

Thread the tape through for the neck. Pull the tape through and tie at the back.

The frock is now ready. You can use the top of the shirt for preparing other smaller articles like *janghia*, etc., for the baby.

The help given by Kumari Margaret Aaron, Assistant Instructress, Home Science Wing, Bhavanisagar, Madras, in preparing this article, is gratefully acknowledged.

TRADE WITHOUT TEARS

Metric weights have come into use. Prices are expressed in terms of Metric units. And yet, transactions involve irksome calculations. — Why?

Because the Metric concept is not followed. Commodities are asked for either according to old weight or its equivalent:

233 grams — for one pao
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